JULY 1993 Vol.11 No.3 £2.95

100% ACORN

Acorn COMPUTING

THE WRITE STUFF

Check out two packages for the budding wordsmith

CONNECTIVITY

Find out about networks in our introductory guide

WINDOW ART

Discover the latest art package from Clares

FREE
Fully working database worth
£50

TOP DRAW!

30 of the best DTP utilities money can buy

No coverdisk?
ask your newsagent

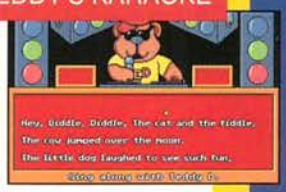
9 770967 525014 07>
EUROPRESS PUBLICATIONS

WIN A £3,000 DREAM HOLIDAY **FUN ZOOL COMPETITION INSIDE**

Help your child to a brighter future – with the best in educational software

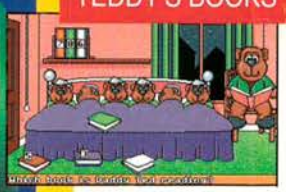
fun school 4

TEDDY'S KARAOKE



Sing along with DJ Ted to popular nursery rhymes.

TEDDY'S BOOKS



Select the correct number of Teddy's bedtime book.

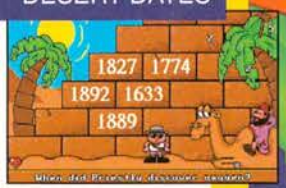
TYPING

Type the correct letters and words and save Freddy from the crocodile.

SHOP KEEEPER

Shop with Freddy and his friends choosing coins to pay the bill.

DESERT DATES



Study historical events to find the secrets of the pyramids.

EXCHANGE RATES

Change Sammy's money at the international exchange desk.

"Fun School 4 zooms to the top of the class. Three brand new packages combining the essentials of the National Curriculum with beautiful graphics, cleverly animated rewards and stimulating sound keep your children engrossed while they learn.

Teddy for **under fives,** Freddy the Frog for **five to seven year olds** and Sammy the Spy for **seven to eleven year olds** provide **SIX** original stimulating programs in every pack. Plus, the carefully designed levels for each program encourage your children to have fun and learn at their own pace – and ensure they get the most from Fun School 4 and keep coming back for more."

FORMAT	Amiga	ST	PC	C64		Spectrum		CPC		PCW		Archimedes
				Tape	Disc	Tape	Disc	Tape	Disc	3"	3½"	
PRICE £	24.99	24.99	24.99	12.99	16.99	12.99	16.99	12.99	16.99	24.99	24.99	24.99

On sale at top retailers nationwide. Selected formats available at larger branches of Boots.
For credit card purchases call 051-357 2961

europress SOFTWARE

Europress Software Limited, Europa House, Adlington Park, Macclesfield SK10 4NP.

The Shop

After a few false alarms, our shop is now open to satisfy all your Acorn needs; machines, software, printers, monitors, modems... in fact almost anything that goes with computers, including **Jolt!** cola.

Bob Voisey (ex-Sysop of Noah BBS) is our shop manager and should be able to help you with anything from the most technical problems to straightforward advice on hardware and software (and he even knows about PCs!)

Limited Offer!

A3000/A3010/A3020/A4000 internal turboSCSI card with CDFS fitted, a 120Mb SCSI hard disk in a metal case with fan and power supply, all for **£399**. (Education £379.05)

Our Other Hardware and Software

High performance dual serial card	£79
This allows serial comms at up to 115,200 baud, with FIFOs for maximum efficiency. If you have a fast modem, you need this! Works with ARCterm 7, ARCbbs, ARCfax, Hearsay II, BinkleyTerm, etc	
v22bis (2400bps) FaxModem bundle	£259
Pace MicroLIN FaxModem, ARCterm ARCfax, and a cable. All you need!	
v22bis (2400bps) FaxModem	£189
Pace MicroLIN FaxModem on its own.	
v32bis (14400bps) FaxModem bundle	£359
USR Sportster FaxModem, ARCterm, ARCfax, and a cable. Very quick!	
v32bis (14400bps) FaxModem	£289
USR Sportster FaxModem on its own.	
20Mb Floptical disk systems	from £349
Unfortunately, these are now only DOS 720k/1.44Mb capable (no ADFS support). Works with most SCSI cards. 20Mb disks only £15!	
121Mb Magneto-Optical systems	from £949
Internal (A5000) & external systems,using our specialised MOFS filing system.	
ARCterm 7	£68
ARCbbs (3 line version)	£85
PC Keyboard/Mouse interface	£89
A5000 - Internal 170Mb 2nd hard disk	£259
External Fujitsu 496Mb SCSI (fast!)	£899
External Fujitsu 1032Mb SCSI (even faster!)	£1199
External Exabyte 2Gb DAT tape backup	£1199

Insured delivery on disks/modems £10+VAT. Education is entitled to a 5% discount on all items (except machines)

Please add VAT at 17.5% to all prices. Plastic welcome.

THE SERIAL PORT

The Serial Port
Burcott Manor, Wells,
Somerset, BA5 1NH

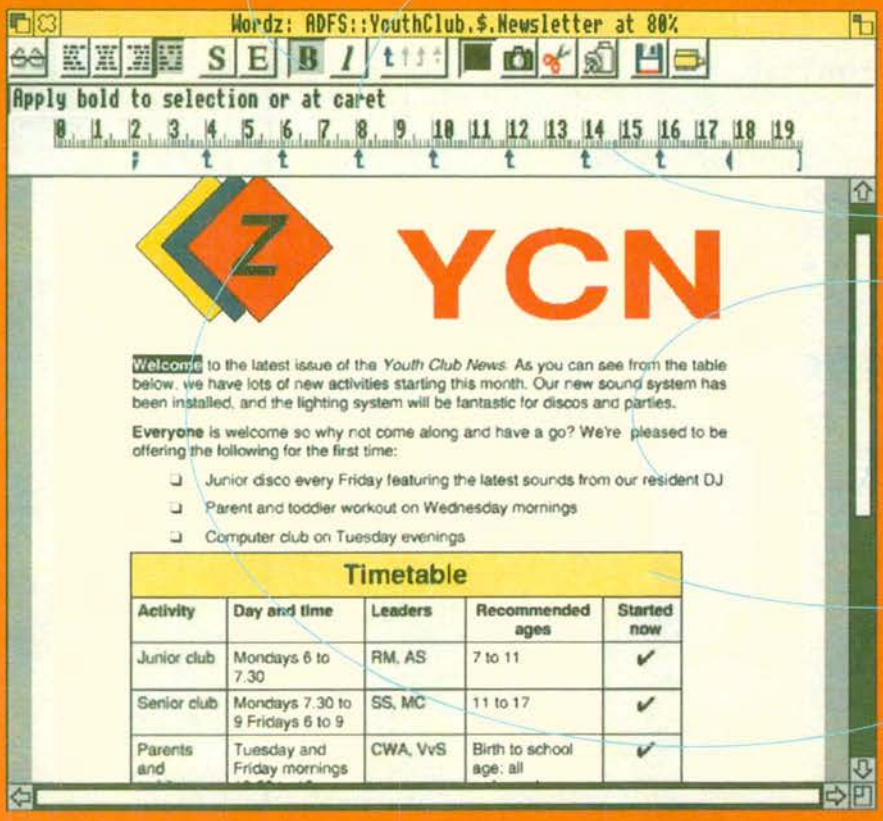
New Shop:
Burwood House
15 Union Street, Wells

Open 10am-6pm
Monday-Saturday

Orders/enquiries email
altman@cryton.demon.co.uk

Telephone	**(0749) 670058**
Fax	**(0749) 670809**
Modem	**(0749) 670030**
	(0749) 679794
ISDN	**(0749) 670883**

news from Colton Software


Wordz: ADFS::YouthClub.$.Newsletter at 80%
Apply bold to selection or at caret
YCN
Welcome to the latest issue of the Youth Club News. As you can see from the table below, we have lots of new activities starting this month. Our new sound system has been installed, and the lighting system will be fantastic for discos and parties.
Everyone is welcome so why not come along and have a go? We're pleased to be offering the following for the first time:
Junior disco every Friday featuring the latest sounds from our resident DJ
Parent and toddler workout on Wednesday mornings
Computer club on Tuesday evenings
Timetable
Activity | Day and time | Leaders | Recommended ages | Started now
Junior club | Mondays 6 to 7.30 | RM, AS | 7 to 11 | ✔
Senior club | Mondays 7.30 to 9 Fridays 6 to 9 | SS, MC | 11 to 17 | ✔
Parents and | Tuesday and Friday mornings | CWA, VvS | Birth to school age: all | ✔

At last, the word processor the Archimedes has been waiting for. A program that's so easy to use you'll be able to create great-looking documents the first time you use it. The facilities used most are in the *button bar*, and the *status line* gives you instant feedback. Just click and drag in the *ruler* to set margins and tabs; click on a button to cut and paste - it's that easy.

Wordz has all the features you'd expect from a state-of-the-art word processor. The powerful style editor gives you complete control over all aspects of your text; *font, spacing, margins,* and *colour*. Unparalleled control over *tables* including dragging to resize columns and rows. Speedy check-as-you-type or whole document spell checking. Import *pictures* and text from other programs, including PipeDream.

Wordz is the first of a family of programs which share the same easy user interface and include dynamic data linking. The spreadsheet Resultz will be available in mid-1993.

Wordz costs £99+VAT. *"Is it easy to use? It's falling-off-a-log easy to use."*

word"Z"!™ ®©

1993...4...

for a free Wordz brochure, complete and return this coupon

name

address

postcode

COLTON software

2 Signet Court, Swanns Road,

Cambridge CB5 8LA

Telephone 0223 311881

Fax 0223 312010

TOP DRAW!

THINKING of producing a leaflet, catalogue, brochure or book? Check out our 15 key hints on how to produce professional looking work plus a round up of the top 30 utilities to help you in your task. Turn to Page 51.

Britain's best Acorn cover disk contains hours of fun and a host of useful utilities linked to our editorial features to make the magazine come alive on your desktop!

Full details about the packed MegaDisk – see Page 6.

Win a dream holiday worth £3,000

You can travel to the location of your choice in this amazing competition for the holiday of a lifetime. Turn to Page 42.

Zool competition

Piles of mega goodies to be won from the Ninja from the Nth Dimension in this totally excellent competition sponsored by Gremlin Graphics. Turn to Page 99.

REGULARS

Comment	15
News	19
Public Domain	59
Problem Solved	73
Body Building	97
Letters	104

REVIEWS

StartWrite	54
Wordz	56
PrimeWord	79
Games	89
Pro-Artisan II	94
Masterfile III	103

FEATURES

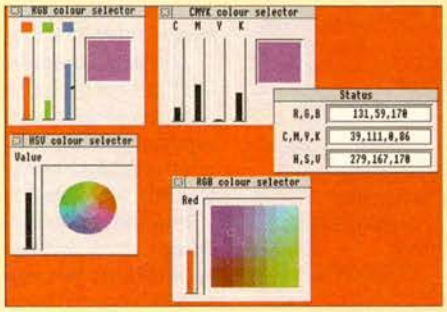
MegaDisk	6
BBC disk	27
32-bit graphics	30
Ozone Layer	39
Networks	45
DTP Utilities	51
Essential Paint	63
Essential Music	66
Risc OS 3.10	70
Newcomers	76

LEARNING CURVE

Picture It II	33
Animated Numbers and Connections	35
Princess Rebecca	36
Time Traveller	37

July subscription disks

This month's exclusive *Acorn Computing* subscriber-only disks features an excellent selection of quality software.



The Archimedes disk contains:
- !Sprich – learning German
- The *Acorn Computing* theme music
- All 8-bit listings
- Plus some great PD software

The BBC Micro disk contains:
- Great domino game
- Create scrolling demos
- Password-protect your machine
- Mental agility with differences

SUBSCRIBE NOW – SEE PAGE 17

• *The editorial and many of the adverts in this magazine were prepared using Impresssion and ArtWorks by Computer Concepts.*

The MegaDisk

EXCLUSIVE SUBSCRIBER DISK

See pages 27 & 28

DataVision Lite: Organising information

YOU can expect to pay £50 for this database from Silicon Vision (081-422 3556) but this month on the *Acorn Computing* MegaDisk the program is yours to explore and use.

There's a brief manual on the disk but if you prefer you can buy the full 90-page version for £17.95 from *Acorn Computing*.

You should dearchive DataVision Lite on to a floppy or hard disk before running it otherwise it just won't work.

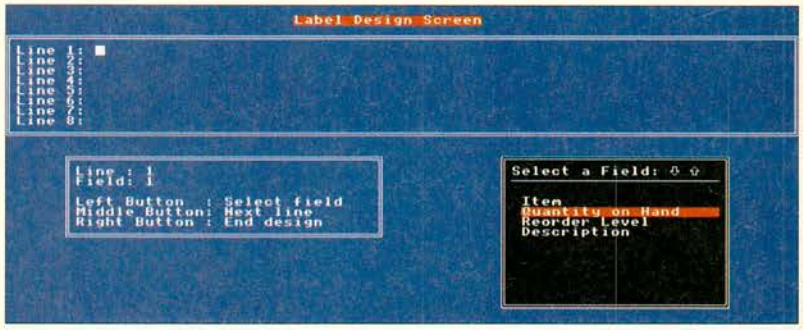
The brief manual gives simple instructions on how to use this relational database providing an integrated environment for the management of your data.

DataVision Lite's relational capability eliminates the need for unnecessary and repetitive tasks and all related databases are automatically updated through a single entry in a master database.

The database manager includes facilities for global and selective mailmerging, comprehensive reporting, complex queries, relational data entry and user-friendly wordprocessing.

In addition to these you can design your own reporting applications through a Report Writer/Enquiry language which is built in.

You can have unlimited records in each file, 999 fields per record, nine field types: Data, time, alphanumeric, multiple-choice, capitals, logical yes/no, integer, real and formulae and 225 characters in each field and up to 100 related files per field.



● *A complete database at your fingertips*

The program is limited to a maximum of 100k files – which is ample for most purposes.

Relationships: Data entry is truly relational with transfers and lookups between files and validations of files includes range check, auto-date/time checking. Files may be linked to a maximum of 99 other files.

Reports: Produce columnar reports and mailing labels, interactive design, up to 20 columns with summaries attached plus a filtering facility for selective reporting and label printing

Queries: Direct menu driven parameters for Maximum, Minimum, Fast search facilities, and *ad hoc* query that combines and/or logic with other operators

Wordprocessing: Includes powerful mailmerging and editing capabilities as well as free-form and selective mailmerging and the ability to export/import to and from text files.

Macro facility: You can attach macros to fields to provide text prompts, multi-text, pop-up windows, default value, range checking, required values, rounding and formulae fields for calculations based on other field values.

Financial Accountant: An example of DataVision's capabilities with nominal, sales and purchase and cashbook/paid ledgers, customers/suppliers, stock and VAT details. All ledgers are updated automatically.

FAULTY DISK?

If your cover disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

Stanley Precision
Unit F
Cavendish Courtyard
Sallow Road
Weldon North
Industrial Estate
Corby
Northants NN17 1JX

If there seems to be a fault with one of the programs please contact us by post describing your machine set-up and exactly what happens when you run the program.

Getting started

THE programs on this disk are stored in a highly compressed format which sometimes enables as much as 1.6Mb of programs and data to be stored on a 800k floppy disk

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques.

Switch on your Acorn micro, put the disk in the drive and click the drive icon. Now double-click !ACmenu – there's a short pause while it scans the archive then it displays a window of the contents.

You can treat this new window like any other one for viewing disk contents, you can run programs and open directories just by double-clicking them.

Large programs must be unpacked by dragging on to a separate disk before being run.

We recommend that you always read the !ReadMe files or access the help information via the Help button.

FastMove: Risc OS 2 speedier copies

THIS small application is for Risc OS 2 users who want to move files between directories on the same floppy or hard disk by renaming rather than using copy and delete – Risc OS 3 machines do this as standard.

FastMove intercepts ADFS's normal action and attempts to rename the file. If the destination is on the same disk as the original the operation is transparent but if you are using different disks, FastMove politely steps aside and allows ADFS to continue its normal steps.

This is useful for hard disks as it is commonplace suddenly to decide to change the tree structure of the disk. Even with a fast hard disk, this can still take up to a minute for a large directory with many files inside, but using FastMove, such an action can be achieved in under a second.

Paul Mason

TechnoDream: Shoot to kill

HAVE you got what it takes to pilot the V7 Terrastormer? Will your fingers be fast enough to take on aliens, collect extra armaments and manoeuvre around space debris? If so then Technodream from Superior Software (0652 658585) is for you – and a friend if you opt for the two-player game.

Author Graeme Richardson has designed this version exclusively for readers of *Acorn Computing* so give yourself over to Lee Armstrong's atmospheric sound and explore the unknown.

The more aliens you destroy the more collectable objects will appear which can be picked up directly or by using the Ram – once you've collected it, of course. The collectables give you extra features: Weapons upgrades, shields, incendiary weapons, force field shielding, extra speed, firing ability to the Ram, more rapid weapon generator recharge and extra energy. But beware, extra weapons and shields are lost when you lose one of your four lives.

You can play from the keyboard or with a joystick and your choice is made via the pause mode. The controls are as listed.

	One player	Two player – Blue	Two-player – Red
Left	Z	Z	<
Right	X	X	>
Up	"	F	"
Down	?	C	?
Fire	Return	G	Return
Ram control	L Shift	L Shift	M
Fire incendiary	Space	L Alt	R Alt
Plus			
Ctrl/F12	Quit		
Break	Pause		
F1/F2	Sound effects volume up/down		
F3/F4	Music volume up/down		
F5	Internal speaker on/off		
F7	Blue player keyboard/joystick toggle (two-player mode)		
F8	Red player keyboard/joystick toggle (two-player mode)		

WANT ANOTHER DISK?

If you subscribe to *Acorn Computing* you receive a second disk each issue. On this month's disk:

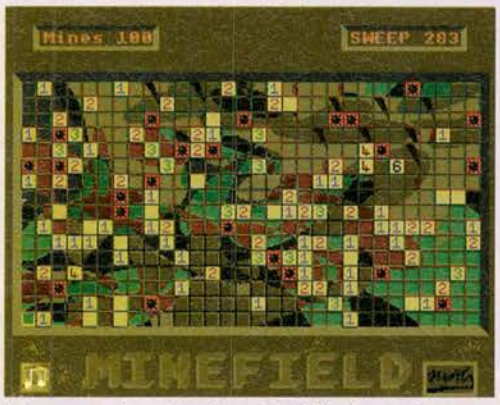
- Practise German with !Sprich
- The 8-bit listings
- Check colours with !ColourMap
- Cute sound effect from !OpenSezMe

See page 17 for further details on how to get your subscription to *Acorn Computing* and the extra disk

● *Heavy fire power in TechnoDream*

Minefield: What a blast

CAN you sweep clear all the mines in the minefield by logical deduction? All you have to do is move the cursor over the squares – some of which are already revealed – and press Return to reveal that square.



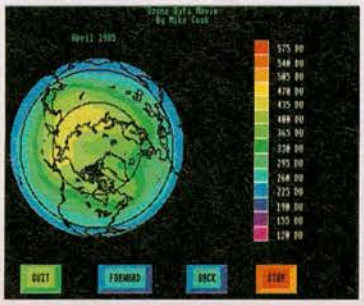
Its contents will give you clues as to what is in the surrounding squares. For instance, a blank square means that there are no bombs surrounding that square. A number from 1 to 8 indicates there are that number of bombs touching that square – including diagonals – while a bomb means you've exploded.

There are 480 squares and the default settings are for 100 mines and 120 squares revealed. This is quite mean to solve and the more mines and the less squares revealed the harder the game. Try 200 mines and 20 revealed if you like a protracted challenge.

Mike Goldberg

Watch the Ozone: Holes in space

FOLLOWING Mike Cook's recent articles on the Ozone Layer this movie shows you the ozone readings taken from the TOMS satellite. All the data comes from NASA's CD-Rom and if you want any more movie data you can contact Musbury Consultants (0706 216701) directly.



PFList:Ordering procedures and functions

AS many wimp programmers will know, in order to produce a good desktop program, you need an extensive and long library of functions and procedures up your sleeve.

Despite and, in some respects, owing to all the functions of the Archimedes it is extremely easy to *lose* such functions or procedures among all those Basic programs. It is even worse if, after *clipping* a program of unused procedures, you suddenly decide you need to use one but can't remember where it is.

This is where PFList comes in, searching through programs and libraries, and listing any functions or procedures. You can specify up to 255 Basic programs to check and extensive wildcard facilities and case sensitivity switching are there to help.

Paul Mason

The MegaDisk

Wanna sell some software?

ACORN COMPUTING is always in the market for good quality applications, utilities and games to put on the MegaDisk and Subscription disk. If you think your program has got what it takes just send it on disk to:

MegaDisk Submissions, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

ArcVenture III: A viking we will go

THE last in the series of archaeological adventures from Sherston Software (0666 840433) is set in Jorvik, the old Viking stronghold now known as York. The setting is an archaeological dig and it is up to you to uncover objects and find out about them.

Your friendly computer will tell you all it knows and even reconstruct what shattered pieces of pottery originally looked like. However, it does not know everything.

In this version of ArcVenture III, written especially for *Acorn Computing*, you have three days to find an unusual object and be transported back in time to find answers to two important questions.

You can wander around Jorvik, questioning the people you meet and exploring how they lived but only when you've found the answers can you return home.

● *On the dig in modern times*

Arcventure III is very simple to use, just follow the prompts given in the program.

In addition there are several keys which may be used throughout:

F1	Sound off
F2	Sound on
Shift key	Holding a Shift key speeds up digging, text display, walking and the time line

Expedition only

L	Looks for special items/ information
D	Closes any open door adjacent to where you are standing
Home	Will confront you with the questions you need to answer provided you have collected the relevant information

To leave either the excavation or expedition hold down the Control key and press the letter Q (Ctrl+Q).

Time Lapse: Hour by hour

THIS Basic demo, is an extension upon the idea of Time Lapse photography often seen on television. This computerised version has three main animated features, all animated at different rates. Firstly the clouds glide across the darkening sky as if a strong wind were blowing, while the sun rises in a flash and trees only take minutes to grow from nothing.

Programmers will realise that the background need never be redrawn and as such it is stored as two sprites. The colour fades are achieved by progressively redefining the palette in a 16-colour mode.

Then the clouds and the sun are superimposed on the background sky sprite – moon, stars and the dithered sky pattern – followed by the ground sprite, the hills, then the trees and finally the text message.

As a challenge this program could have various enhancements such as adding the seasons, with leaves falling off the trees in autumn and the branches becoming covered by snow in winter. Or perhaps you could include the different phases of the moon's cycle or even a solar eclipse.

David Hindley

● *Time Lapse photograph on your micro*

Next month on the MegaDisk

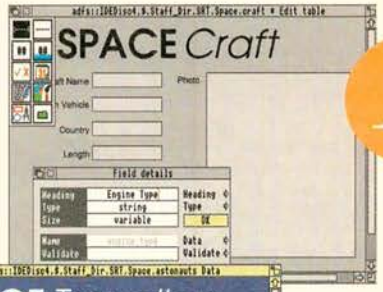
MULTIMEDIA is a word that covers a multitude of sins. However, next month you can try out a full but simple-to-use hypertext program called BookBinder. Written by our very own Mike Cook this multi-tasking program used to cost £55 but it can be yours in its entirety when you buy the August issue of *Acorn Computing*.

Maths is one hole which can plugged very effectively by good education software – but which package is right for your child and how does it fit into the National Curriculum? 10/10 Software's (0742 700661) range of products grow with your child with subject areas and difficulty levels changing with the ability of the users.

A special version of 10/10 Maths has been written exclusively for *Acorn Computing* and it will allow you to play all the games and make progress on the evaluation chart, the only restriction being that you can't save.

it's this easy with

Squirrel



1

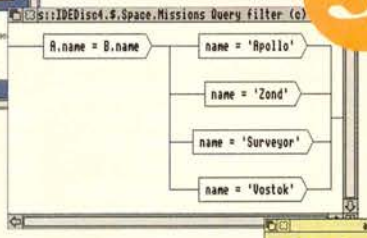
Create Mode

Build new databases with just a few mouse operations. Never before has table creation been this quick and easy. Squirrel is a no limit product! There are no limits to the number of characters in a field, fields in a record, or records in a table. Both single and multi line text fields are supported. File definitions may be changed at any time.

2

Data Mode

Store images, text and sounds within each record to create powerful multi media databases. Browse through the database in any field order.



3

Query Mode

Squirrel incorporates a radical new graphical approach to creating complex queries – a series of INCLUDE and EXCLUDE filters are linked to form a graphical flowchart. Squirrel is fully relational, allowing data from multiple databases to be joined in one query or report.

4

Query Data Mode

Browse through results of queries on screen Query definition may be saved, or query data may be re-indexed as a new table.

5

Reporting

Include Sprites and Drawfiles in reports to produce desk-top publishing quality output Powerful label printing allows multiple labels across the web.

What the press say...

"It has leap-frogged all the database development of the past 10 years and emerges as the pre-eminent data storage system for the Arc."

Steve Turnbull, Micro User

"The ease of table creation, data entry and browsing, searching and sorting place this innovative software in the first league."
"No other product approaches the performance of Squirrel at anything like the price and it is to be highly recommended."

John Schild, RISC User

"Probably the ARC DBMS most in touch with current trends in database development."
"You are going to need Squirrel which is easily the most powerful database available today."

Archimedes World

Squirrel Single User	£ 129.00 + VAT
Squirrel multi user/Site Licence	£ 516.00 + VAT
Squirrel 'C' Developer's Toolkit	£ 99.00 + VAT

digital services

9 Wayte Street, Cosham, Portsmouth
Hampshire PO6 3BS Tel 0705 210600

061 766 8423

Phone lines open :-
Mon - Fri 09.00 - 17.00
Sat 10.00 - 17.00

FAX: 061 766 8425

New Acorn Hardware

Official Acorn Publishing Dealer

A540 4Mb Ram, 120Mb HD	£1995.00
A4 4/60 Mb HD Portable c/w Acorn shoulder bag	£1699.00
A4 2 Mb FD Portable	£1399.00
A5000 / 2Mb Ram, 80Mb HD, Arm 3, Acorn Multiscan Monitor	£1399.00
A5000 / Learning Curve / 2Mb Ram as above c/w software	£1445.96
A5000 / 4Mb Ram, 120Mb HD Arm 3, Acorn Multiscan Monitor	£1599.00
A5000 ES - Econet System Arm 3, Acorn Multiscan Monitor	£1299.00
A5000 NS - Network System Arm 3, Acorn Multiscan Monitor	£1399.00
A4000 Home Office System Arm 250, Acorn Monitor	£999.00
A4000 Home Office Multiscan System Arm 250, Acorn Multiscan Monitor	£1049.00
A4000 HD 80 System Arm 250, Acorn Monitor	£949.00
A4000 HD 80 Multiscan System Arm 250, Acorn Monitor	£999.00
A3010 Family Solution Arm 250, TV Modulator	£424.68
A3010 / 2Mb Learning Curve System Arm 250, Acorn Monitor	£680.00
A3020 / 2Mb FD System Arm 250, Acorn Monitor	£749.00
A3020 / 2Mb FD Multiscan System Arm 250, Acorn Multiscan Monitor	£799.00
A3020 / 2Mb HD 60 System Arm 250, Acorn Monitor	£899.00
A3020 / 2Mb HD 60 Multiscan System Arm 250, Acorn Multiscan Monitor	£949.00

A Finance option is available on the above machines (14.7% APR)

Written details available on request

Acorn Special Needs Centre

We operate the Acorn Teacher and Academic Schemes

Please call for free information packs

A540 Upgrades

4Mb Ram Upgrade	£299.00
Taxan 795 VIDC Modes Disc	£7.50
Technical Reference Manual	£65.00

A5000 Upgrades

2Mb Ram Card	£110.00
Dust Cover (One piece)	£12.95
Technical Reference Manual	£65.00

A3000/10 Upgrades

1 Mb Ram A3010 (2Mb in total)	£39.00
4 Mb Ram A3010	£128.00
A3010 to AKF12/17 adaptor	£9.95
1 Mb Ram (2 Mb in total)	£45.00
4 Mb Ram	£128.00
20 Mb Int Hard Disc (IDE)	£199.00
5.25" External f/disc buffer	£39.00
Joystick (Quickshot III)	£12.00
Joystick Interface	£32.00
Serial Upgrade	£19.00
User & Analogue Podule	£46.00
User & Midi Podule	£46.00

A400 Upgrades

1 Mb Ram	£35.00
2 Mb Ram	£65.00
3 Mb Ram	£99.00
5.25" Ext. floppy disc int.	£39.00

A4 Upgrades

A4 2 MB RAM Upgrade	£110.00
A4 60 MB HD Upgrade	£350.00
A4 Battery Pack	£50.00
A4 Econet Upgrade	£50.00
A4 Shoulder Bag	£35.00
A4 Technical Reference Manual	£65.00

RISC OS 3

RISC OS 2 -> 3.1 Upgrade	£41.70
RISC OS 3 -> 3.1 Upgrade	£16.17
RISC OS 3 Hardware Kit A300	£25.00

Expansion Cards

Econet Module	£46.00
Hawk V9 Video Digitiser	£199.00
I/O Expansion Card	£79.00
Midi Expansion Card	£65.00
SCSI Expansion Card (Acorn)	£229.00
SCSI Expansion Card (Morley)	£149.00

ROMBO Colour Digitisers

A3000 inc. podule housing	£72.30
A400 / A5000	£72.30

Aleph 1

Arm 3 Upgrade	£175.00
386 PC Expansion Card 1Mb	£390.00
386 PC Expansion Card 4Mb	£485.00
486 PC Expansion Card 4Mb	£585.00

Standard Monitors

Acorn Colour	£199.00
Microvitec Cub 3000	£199.00
Philips Mono (Green)	£85.00

All monitors come with free lead. State type of computer when ordering.

Multiscan Monitors

Acorn Multiscan AKF18	£299.00
Taxan 795 Multivision	£449.00

Floppy Disc Drives

5.25" Single 40/80 no psu	£95.00
5.25" Single 40/80 with psu	£109.00
5.25" Dual 40/80 no psu	£185.00
5.25" Dual 40/80 with psu	£199.00
3.5" Single with psu	£85.00
3.5" + 5.25" 40/80 with psu	£209.00

Printers

Canon Bubblejet BJ-10ex	£172.00
Canon BJ10ex inc. turbo driver	£219.00
Sheetfeeder for BJ-10ex	£48.00
Canon BJ200	£299.00
Canon BJC800 (col.) inc. s/w	£1469.00
Citizen 120D+	£114.00
Citizen Swift 9	£169.00
Citizen Swift 240	£239.00
Colour Kit for above	£29.00
Citizen Swift 200	£199.00
Citizen Swift 200 Colour	£225.00
Citizen Swift 128K Memory	£35.00
Integrex Colourjet 132	£519.00
HP Deskjet 500	£299.00
HP DeskJet 550C	£449.00
Laser Direct (LBP4 Hi Res.)	£849.00
Laser Direct (LBP8 Hi Res.)	£1279.00

Econet

Level 4 AUN Software	£399.00

Scanners

Flatbed A4 256 Grey SCSI (CC)	£745.00
Flatbed A4 without SCSI card	£585.00
Scan Junior Scanner 256	£199.00
Scanlight Senior Scanner A4	£289.00
Sheet Feeder for above A4	£135.00

Fax

Fax Pack (CC)	£259.00

FREE

Acorn - 3 Years On Site Warranty on all Acorn Hardware* purchased from Dabhand Computing

*excludes Acorn Purchase Schemes / Education Schemes A4 Portable / Acorn Printer

Printer Drivers

Midnight Graphics

Citizen Swift 9 Sprite Dump	£26.04
Citizen Swift 24 Sprite Dump	£26.04
Epson 24 Sprite Dump	£26.04
HP Deskjet 500C Sprite Dump	£26.04
HP Paintjet Sprite Dump	£26.04
Integrex 132 Sprite Dump	£26.04
Integrex Colourcel Sprite Dump	£26.04
Juki 5520 Sprite Dump	£26.04
Star LC10 Sprite Dump	£26.04
Star XB24 Sprite Dump	£26.04
Star LC200 Sprite Dump	£26.04
Star LC24-200 Sprite Dump	£26.04

Ace Computing

Printer JX (Colour Dot Matrix)	£14.00
Printer DJ (Deskjet 500C)	£14.00
Printer PJ (Paintjet)	£14.00
PRO Drivers (All)	£40.00

Beebug

Deskjet 500/550C Driver	£15.00
Star/Epson/Citizen (Colour)	£15.00

Electronic Font Foundry

BubbleJet - BJ10e/130e	£10.00

Cables

Arc - 15 Pin to 9 Pin Adaptors	£9.95
Arc - Monitor - 8833 inc sound	£8.65
Arc - Monitor - 8833 II inc sound	£8.65
Arc - Parallel Printer Cable	£5.00
Keyboard Extender 400/500	£7.50
Mouse Extender	£7.50

BBC Software

Blob 1	£18.00
Blob 2	£18.00
Chick Chase (80 Track Only)	£15.00
E-Type	£13.00
Master Break	£10.39
Modem Master	£11.26
Play it Again Sam No's 1 - 16 ea.	£11.95
Reversals (80 Track Only)	£20.00
UIM	£14.95
Where's Blob	£18.00

Master Compact

Play It Again Sam No's 1 - 16 ea.	£13.00
UIM	£14.95

Archimedes Software

4 Mation

Chameleon	£35.00
Desktop Basic Editor	£25.00
Jiglet	£25.00
Jigsaw	£27.00
Noot	£50.00
Poster	£75.00
SmArt	£50.00
SmArtFiler	£32.00
Snippet	£35.00
Vector	£75.00

Ace Computing

ArcLight	£40.00
Euclid 2	£40.00
Mogul	£17.00
Splice	£26.00
Tween	£26.00

Acorn Computers

1st Word Plus	£65.00
Desktop Assembler (V 2)	£119.00
Desktop C (V 4)	£180.00
Font Starter Pack	£39.00
Newhall Font Pack	£39.00
PC Emulator / Free Shareware	£95.00
TCP/IP Programers Pack	£50.00
TCP/IP Protocol Suite	£199.00

Arxe Systems

MultiFS	£27.00

Beebug

DeskEdit 2	£25.00
Desktop Thesaurus	£19.00
Hard Disc Companion 2	£45.00
Hearsay II	£69.00
Masterfile 3	£49.00
Ovation	£85.00
Playback	£17.00

Brilliant Computing

Everyday Signs	£20.00
Joystick Games	£20.00
Streetwise	£20.00
Switch On	£20.00
Switch On Actions	£20.00
Teds Adventures	£20.00

Clares Micro Supplies

Artisan 2	£45.00
Fervour	£19.00
Illusionist	£79.00
Interdictor	£10.00
Interdictor II	£23.00
ProArtisan	£70.00
Render Bender 2	£99.00
Rhapsody 2	£45.00
Schema	£90.00

Coin Age

Pesky Muskrats	£14.00

Colton Software

Pipedream 3	£73.00
Pipedream 4	£124.00
Wordz	£88.00

Computer Concepts

AvanteGarde Font Pack	£24.00

ArtWorks	£129.00
Bookman Font Pack	£24.00
Canon BJ10e/x Driver	£42.00
Canon BJC800 Driver	£95.00
Compression	£34.00
Equasor	£37.00
Graphics Card	£249.00
Impression II Borders Disc	£12.00
Impression Business Suppliment	£39.00
Impression II Free Drawfile Disc	£124.00
Impression Junior	£69.00
Inter-Word	£29.00
Show Page	£109.00

Cygnus Software

Iron Lord	£14.00
Tower of Babel	£14.00
Twin World	£14.00

Dabhand Computing

Arc DFS	£22.00

Database Software

Fun School 3 under 5s	£16.95
Fun School 3 5-7 year olds	£16.95
Fun School 3 over 7s	£16.95
Fun School 4 under 5s	£20.00
Fun School 4 5-7 year olds	£20.00
Fun School 4 7-11 year olds	£20.00

Domark

3D Construction Kit	£25.00
Mig29 Super Fulcrum	£29.00
Trivial Pursuit	£22.00

Dyslexia Software

Specialist software for all ages - home / education

Call for details

Empire

Pipemania	£16.00

Electromusic Reasearch

Creations Discs 1-8 ea.	£19.00
MIDI Analyser	£29.00
Microstudio	£78.00
Music Player	£35.00
RhythmBox	£29.00
SoundSynth	£39.00
Studio 24 Plus	£149.00

ESM

Desktop Folio	£79.00

Hybrid

Elite	£31.95

Icon Technology

EasiWriter	£115.00
TechWriter	£195.00

Krisalis Software

Champions Collection - Leader Board / Man. United / Squash / Boxing	£22.00
Chuck Rock	£19.00
Gods	£19.00
Hero Quest	£22.00
James Pond	£19.00
Krisalis Collection - Pipemania / Revelation / Mad Professor Mariarti / Terramex	£22.00
Lemmings	£19.00
Mad Professor Mariarti	£14.00
Manchester United Europe	£19.00
Nebulus	£19.00
Populous	£22.00
Swiv	£19.00
Turbo Challenge 2	£19.00
World Champ. Boxing Manager	£18.00
World Championship Squash	£18.00

Leading Edge

A3010 Joymaster	£24.00
Investigator II	£22.00
Joystick Interface (All Models)	£32.00
Desktop Tracker	£74.00

Lingenuity

CableNews	£149.00
HotLink Presenter	£29.00
Presenter GTi	£69.00

Longman Logotron

ArcComm 2	£49.00
Eureka!	£99.00
First Logo	£23.00
Landmarks Aztec	£19.00
Landmarks Columbus	£19.00
Landmarks Egypt	£19.00
Landmarks Rainforest	£19.00
Landmarks Victorians	£19.00
Landmarks World War II	£19.00
Magpie	£40.00
Notate	£49.00
Numerator	£60.00
Numerator Chaos	£18.00
Pendown Plus	£69.00
Pendown Outline Fonts	£18.00
Pinpoint	£75.00
Pinpoint Junior	£23.00
Revelation 2	£95.00
Revelation ImagePro	£139.00
S-Base Personal	£89.00
S-Base Developer	£169.00
SkyHunter	£22.00

MicroPower

Chess 3D	£14.00
Zelanites	£15.00

Midnight Graphics

ClipArt 1 / Clipart 2 each	£29.95
Express	£51.02
Tracer	£52.13

Minerva Software

Applications

Ancestry	£59.00
Atelier	£69.00
Cadet	£149.00
Desktop Office 2	£79.00
Easiword 2	£54.00
Flexifile	£89.00
Graphbox	£55.00
Graphbox Professional	£105.00
Home/Club Accounts	£34.00
Linkword - French	£35.00
Linkword - German	£35.00
Linkword - Spanish	£35.00
Multistore II	£179.00
PCAccess	£19.00
PrimeArt	£69.00

Leisure

Bughunter in Space	£11.00
Bug Hunter / Moon Dash	£11.00
Casino	£11.00
Caverns	£11.00
Family Favorites	£11.00
Freddy's Folly	£11.00
Hoverbod	£11.00
Ibix the Viking	£11.00
Jet Fighter	£11.00
Maddingly Hall	£11.00
Orion	£11.00
Redshift	£11.00
Talisman	£11.00
Thundermonk	£11.00

Northwest SEMERC *

Conform Keyboard Software	£18.00
Le Monde a Moi	£18.00
Meine Welt	£18.00
My World (Program)	£18.00
My World 2	£28.00
My World - Christmas Disc	£9.00
My World - Design	£9.00
My World - Fuzz Buzz	£12.00
My World - Geog. Key Stage 1	£9.00
My World - I'm Special	£9.00
My World - Nursery Disc	£9.00
My World - Maths	£9.00
My World - Patterns	£9.00
My World - Sampler	£9.00
My World - Skeletons	£9.00
My World - Village/Town	£9.00
Oldham Keyboard	£99.00
Full Phases	£28.00
Phases 3	£18.00
Phases - Borders disc	£9.00
Phases - Christmas disc	£9.00
Phases - Clip Art 1	£9.00
Phases - Very Hungry Caterpillar	£9.00

* Please add £2.50 P&P to SEMERC Software

Oak Solutions

Draw, Print and Plot	£39.00
Genesis II	£99.00
Worra Battle	£10.00
WorraCAD	£74.00

Sherston Software

!Draw Help	£15.95
!Help (RISC OS 2)	£7.95
!Help 3 (RISC OS 3)	£9.95
Animated Alphabet	£19.00
Arcventure I - Romans	£25.00
Arcventure II - Egyptians	£25.00
Badger Trails	£35.00
Dreamtime	£20.00
Farm	£19.00
Fleet Street Phantom	£23.00
Glimpse	£8.50
Mapventure	£23.00
Microbugs	£25.00
Nature Park Adventure	£24.50
Selladore Tales	£24.00
Space Mission Mada	£23.00
Stig of the Dump	£22.00
Story Starts	£25.00
Teachers Cupboard	£24.50
Teddy Bears Picnic	£23.00
Viewpoints	£35.00
Wizards Revenge	£17.00
Worst Witch	£21.50

SIMMIS

Flight Sim Toolkit	£31.00

Superior Software

Air Supremacy	£14.00
Conqueror	£15.00
Hostages	£14.00
Master Break	£14.00
Play it again Sam 1	£19.00
Repton 3	£14.00
Speech!	£14.00
Superior Golf	£14.00
Technodream	£19.00
The Last Ninja	£19.00
Zarch	£14.00

The Data Store

FontFX	£9.95
ShapeFX	£9.95

The Fourth Dimension

Apocalypse	£14.00
Arcticulate	£14.00
Arctist	£14.00
Boogie Buggy	£14.00
Break 147 / Superpool	£25.00
Black Angel	£28.00
Cataclysm	£18.00
Chocks Away 2	£18.00
Chocks Away Extra Missions	£14.00
Chocks Away 2 + Ext. Missions	£27.00
Chopper Force	£22.00
E-Type Compendium	£18.00
Enter The Realm	£18.00
Grievous Bodily 'ARM	£18.00
Holed Out Compendium	£18.00
Nevryon	£14.00
Pandora's Box	£18.00
Powerband	£14.00
Pysanki	£14.00
Saloon Cars - Deluxe	£25.00
The Real McCoy 1	£23.00
The Real McCoy 2	£23.00
The Real McCoy 3	£23.00
The Wimp Game	£14.00
X-Fire	£16.00

Triple R Education

10 out of 10 English	£19.00
10 out of 10 Maths	£19.00
10 out of 10 Early Essentials	£19.00

Books (No VAT)

Archimedes Assembly Language	£14.95
Archimedes Operating System	£14.95
C: A Dabhand Guide 3rd Edition	£16.95
A3000 Technical Guide	£29.95
Assembler Release 2	£25.00
BASIC V: A Dabhand Guide	£9.95
BBC Basic Guide (Acorn)	£19.95
Budget DTP (Draw & Edit)	£12.95
DTP Seeds (4Mation)	£8.45
Desktop C Release 4	£25.00
Desktop Development UG	£25.00
Graphics on the Arm - A DHG	£14.95
First Word Plus - Dabhand Guide	£13.95
as above with disc	£21.90
Impression - Dabhand Guide	£14.95
as above with disc	£16.95
M128 Ref. Man.Pts 1&2 (ea.)	£14.95
Programming in Ansi C	£14.95
RISCOS 3 PRM's	£TBA
Understanding Spreadsheets	£9.95

The above books have accompanying discs add £5 for 5.25", £7 for 3.5"

Hours of Opening

Monday - Friday 9.00 a.m. - 5.00 p.m.
Saturday 10.00 a.m. - 5.00 p.m.
Lunch 1.00 p.m. - 1.30 p.m.

How to find us

Important Facts

- **NO Minimum Order Value**
- **NO Carriage Charges in Mainland UK**
- **ALL Goods Despatched within 24 Hours, subject to stock levels**
- **Acorn Education Dealer**
- **Acorn Qualified Dealer**
- **Acorn Service Centre**
- **Hotline Support on all Hardware and Software purchased from us**

Terms & Conditions

TERMS: EC residents add 17.5% VAT to all prices, except books. Carriage *FREE on all items in the UK (*with the exception of *remote* areas). Foreign orders, carriage at cost. (quotations available). Access/Visa cards accepted. Dabhand Computing Ltd. is a Qualified Acorn Dealer. Official orders accepted from public sector/education/PLCs, otherwise cash with order. Tender invitations welcome. Callers welcome. We are 2 minutes north of J17, M62. Prices subject to change without notification. Goods offered subject to being unsold.

DABHAND COMPUTING

DABHAND COMPUTING LTD
5 Victoria Lane
Whitefield
Manchester, M25 6AL

ICS

051-625 1006

SOFTWARE

JUNE 1993

10 out of 10	*10 out of 10*	
– Early Essentials (-6), English (6-16), Maths Number (6-16)	each	£19
– French, German, Italian, Junior Essentials, Maths Algebra, Science, Spanish	each	£POA
1st Paint	*Resource*	£34
1st Word Plus Manual	*Acorn*	V0 £10
2067 BC	*Oregan*	£18
2067 BC + Entropy	*Oregan*	£26
3D Construction Kit (not OS 3.1)	*Domark*	£35
A3000 Technical Reference Manual	*Acorn*	V0 £32
A4 Technical Reference Manual	*Acorn*	V0 £65
A5000 Technical Reference Manual	*Acorn*	V0 £65
A540 Technical Manual	*Acorn*	V0 £65
ABC Version 3	*Oak*	£79
Acheton / Kingdom of Hamil	*Topologika*	£17
Access	*TBA*	£21
Accounts	*ACS*	£245
Acorn Advance	*Acorn*	£89
– Primary Licence		£183
– Secondary Licence		£442
Adventure Playground, age 5-8	*Storm*	£21
Aggressor	*Atomic*	£15
Air Supremacy	*Superior*	**£16**
Aldebaran	*ArcAngels*	£26
Alerion	*Dabs*	£12
Alien Invasion	*Dabs*	£12
All-In Boxing	*Dabs*	£12
Almanac	*Stallion*	£57
AlphaBase	*Clares*	£37
Alpha-Sound	*Xavier*	£29
ALPS Adventure Language Programming System	*Alpine*	£28
Amazing Ollie, age 4+	*Storm*	£14
Ancestry	*Minerva*	£59
ANSI C Release 4 User Guide	*Acorn*	V0 £25
Arcade 3	*Clares*	£13
ArcComm 2	*Longman*	£47
ArcDFS	*Dabs*	£22
ArcFAX	*David Pilling*	£19
Arcendium	*Dabs*	£12
Archimedes Assembly Language	*Dabs*	V0 £15
– with disc		£22
Archimedes First Steps	*Dabs*	V0 £10
Archimedes Game Maker's Manual	*Sigma*	V0 £15
Archimedes Operating System	*Dabs*	V0 £15
– with disc		£22
Architech	*ExpLAN*	£165
Archivist Pro	*Oregan*	£44
Archway 2	*Simtron*	£78
ArcLight	*Ace*	£45
ArcMonitor	*CIS*	£21
Arcol Desktop	*ExpLAN*	£49
Arcounts Manager	*Visionscan*	£295
ARC-PCB	*Silicon*	£99
– Professional	*Silicon*	£234
– Schematics	*Silicon*	£319
ArcSpell 1	*Xavier*	£29
ArcSpell 2	*Xavier*	£29
Arcterm 7	*Serial Port*	£59
ARCticulate	*Fourth Dim*	£19
ARCtist	*Fourth Dim*	£19
ArcTrivia	*Moray*	£21
Arcventure – I ... The Romans, age 10-12; II ... The Egyptians, age 8-9; III ... The Vikings, age 7-11 – each	*Sherston*	£30
Armadeus	*Clares*	£59
Armadeus Sampler Board	*Clares*	£129
Artisan 2	*Clares*	£43
Art Machine Pack 1	*Topologika*	£39
Art Machine Pack 2	*Topologika*	£39
ArtWorks	*CC*	**£119**
– network licence		£655
– site licence		£545
Astro	*Topologika*	£35
Atelier	*Minerva*	£69
AUN/Level 4 Fileserver	*Acorn*	£395
Avon & Murdac	*Topologika*	£16
Badger Trails, age 9-11	*Sherston*	£37
Bambuzle	*Arxe*	£12
BASIC V	*Dabs*	V0 £10
Basic Wimp Programming	*Dabs*	V0 £POA
Battlechess	*Krisalis*	**£21**
Battletank	*Minerva*	£9
BBC Basic Guide	*Acorn*	V0 £21
Beginner's Guide to Wimp Programming on the Archimedes	*Sigma*	V0 £13
Birthday Present	*Topologika*	£POA
Black Angel	*Fourth Dim*	£26
Blitz	*Arxe*	£12
BlowPipe	*Leading Edge*	£14
Bobby Blockhead vs The Dark Planet	*Atomic*	£15
Bookstore – Primary, KS1,2	*ESM*	£37
Bookstore – Secondary	*ESM*	£58
Bookstore – Welsh Primary, KS1,2	*ESM*	£58
Bookstore – Welsh Secondary	*ESM*	£78
Break 147 & Superpool	*Fourth Dim*	£25
Britain by Rail	*Fisher-Marriott*	£19
Budget DTP	*Dabs*	V0 £13
Bug Hunter / MoonDash	*Minerva*	£10
Bug Hunter in Space	*Minerva*	£10
Business Accounts	*Minerva*	£298
C (new edition)	*Dabs*	V0 £16
– with disc		£24
CableNews	*Lingenuity*	£136
CADet	*Minerva*	£135
Cambridge Pascal	*Oak*	£79
Cartoon Collection	*Micro Studio*	£16
Casino	*Minerva*	£11
Castle of Dreams, age 9+	*Storm*	£22
Cataclysm	*Fourth Dim*	£18
Caverns	*Minerva*	£10
C Development System	*RISC*	**£69**
Chameleon (new version)	*4mation*	£33
Champions Compilation	*Krisalis*	£24
Charts & Graphs	*Computer Tutorial*	£17
ChartWell	*RISC*	£25
Chatter	*4mation*	£34
Chequered Flag	*CIS*	£18
– Extra Circuits	*CIS*	£16
Chess 3D	*Micro Power*	£21
Children's Graphics	*Micro Studio*	£16
Chocks Away Compendium	*Fourth Dim*	£27
Chopper Force	*Fourth Dim*	**£19**
Christmas Adventure, age 5-8	*Storm*	£19
Christmas Allsorts, age 7-16	*Sherston*	£16
Chuck Rock	*Krisalis*	**£17**
Clip Art	*Graphics Factory*	
– Vol 1 (General), sprites		£19
– Vol 2 (General) / Vol 3 (Animals) / Vol 4 (Sport) / Vol 5 (Characters)	each	£25
Clip Art Set 1, drawfiles	*Midnight*	£28
Clip Art Set 2, drawfiles	*Midnight*	£28
CNC Designer V3 for Lathe	*TechSoft*	£343
CNC Designer V3 for Lathe and Miller	*TechSoft*	£493
CNC Designer V3 for Miller	*TechSoft*	£343
Coffee, age 9+	*Storm*	£28
Colour Screen»Mac	*Human*	£90
– Arc/Mac Cable	*Human*	£24
ColourSep	*ICS*	£15
– site licence		£45
ColourSep Starter Packs	*ICS*	
– DeskJet 500 (Mono)		£55
– site licence		£85
– BJ-10 with Cartridges		£85
– site licence		£115
– BJ without Cartridges		£40
– site licence		£70
Compression	*CC*	£34
Computer Basics	*Computer Tutorial*	£17
Concept Designer	*Longman*	£23
Connections, age 5-8	*Sherston*	£27
Control Logo	*Longman*	£25
Converta-Key	*Triple R*	£9
Cops	*Alpine*	£15
Countdown to Doom / Return to Doom / Philosopher's Quest	*Topologika*	£25
Craftshop 1	*4mation*	£19
Craftshop 2	*4mation*	£19
Creator	*Alpine*	£31
Crisis	*CIS*	£15
Cross-32 Meta-Assembler	*Baildon*	£125
– manual for evaluation	*Baildon*	V0 £15
Crystal Rain Forest, age 8-11	*Sherston*	£35
Curves	*Topologika*	£37
Cyber Chess	*Fourth Dim*	**£23**
Cyborg	*Alpine*	£19
DataGraph	*Topologika*	£29
Datapower	*Iota*	**£129**
DataVision	*Silicon*	£79
DataWord	*Triple R*	£15
DBEdit	*4mation*	£28
Decorated Alphabet, sprites	*Micro Studio*	£17
Designer V3	*TechSoft*	£193
Designer Intro (not OS 3)	*TechSoft*	£75
Designer's Graphics, draw/sprites	*Micro Studio*	£16
DeskEdit2	*RISC*	£27
Desktop Assembler Release 2	*Acorn*	£119
Desktop C Release 4	*Acorn*	£180
Desktop Database	*Iota*	£52
Desktop Folio, KS1,2	*ESM*	£60
Desktop Folio Curriculum Packs, KS2+: Christmas, Editors, Maths, Space, World War II	each	£22
Desktop Folio – Welsh, KS1,2	*ESM*	£82
Desktop Office v2	*Minerva*	£75
Desktop Publishing on the Archimedes	*Sigma*	V0 £13
Desktop Thesaurus	*RISC*	**£16**
Detect-a-Pet, age 5-11	*ESM*	£49
DFS Reader	*RISC*	£9
Digital Symphony	*Oregan*	£45
DrawBender	*ICS*	£10
– site licence		£30
!Draw_Help, age 13+	*Sherston*	V0 £16
Draw Print & Plot	*Oak*	£35
Dreamwave, age 14+	*EMR*	£34
Droom	*Resource*	£24
Dust	*Resource*	£29
DTP Graphics 1 Mono, sprites	*Micro Studio*	£15
DTP Graphics 2 Colour	*Micro Studio*	£17
DTP Graphics combined	*Micro Studio*	£25
DTP Seeds	*4mation*	V0 £8
Dungeon	*Fourth Dim*	£26
Easiword Plus	*Minerva*	£45
EasiWriter 2	*Icon*	£115
– Dictionaries: Danish / Dutch / French / German / Italian / Norwegian / Spanish / Swedish / Swiss German /Welsh	each	£30
Ego: Repton 4	*Superior*	£18
Einstein	*Ace*	£106
Elite	*Hybrid*	£32
EluciData (OCR)	*Irlam*	£155
– bought with Irlam Scanner		£79
Enter the Realm	*Fourth Dim*	£18
Equasor	*CC*	£37
Ethnic Borders	*4mation*	£10
E-Type Compendium	*Fourth Dim*	£18
Euclid	*Ace*	£55
Eureka	*Longman*	£99
ExcellonDrill	*Silicon*	£63
Express	*Midnight*	£45
Eye for Spelling, 1,2	*ESM*	£32
Family Favourites (not OS 3)	*Minerva*	£11
Farmer Giles	*Computer Tutorial*	£16
Farmer Giles II	*Computer Tutorial*	£17
Fervour	*Clares*	£19
Film-Maker	*Silicon*	£63
Find It!	*Appian*	£29
Fireball II Xtra	*CIS*	£9
First Impression	*Word Processing*	V0 £28
First Logo	*Longman*	£22
First Words and Pictures	*Chalksoft*	£21
Flare	*Silica*	£22
Flexifile	*Minerva*	£75
Flight Path, age 9+	*Storm*	£27
Flight Sim Toolkit	*Simis*	£31
Fontasy	*ICS*	£15
– site licence		£45
Fontasy / DrawBender / Placard	*ICS*	£30
– site licence		£80
FontFX	*Data Store*	£9
– site licence		£70
Font Pack – Newhall, Starter, Symbol – each pack	*Acorn*	£35
Font Pack 1 – Paladin, Swiss B, Symbol B, Vogue	*RISC*	£47
Font Pack – Avant Garde, Bookman Pembroke – each pack	*CC*	£24
Food for Thought, age 7-16	*Sherston*	£16
Freddy's Folly (not OS 3)	*Minerva*	£8
Freddy Teddy	*Topologika*	£18
– Balloons & The Zoo	*Topologika*	£27
– The Playground	*Topologika*	£27
– The Puddle & The Wardrobe	*Topologika*	£27
Freddy Teddy's Adventure	*Topologika*	£18
Fun School 2	*Europress*	
– age -6, age 6-8, age 8+	each	£17
Fun School 3	*Europress*	
– age -5, age 5-7, age 8+	each	£18
Fun School 4	*Europress*	
– age -5, age 5-7, age 7-11	each	£18
Galactic Dan	*Fourth Dim*	£19
Gammaplot	*Minerva*	£36
Gate Array Design System	*Silicon*	£114
Genesis II	*Oak*	£99
Genesis Plus	*Oak*	£25
Genesis Script Language	*Oak*	V0 £15
GenIndex	*Oak*	£39
GerberPlot	*Silicon*	£63
Giant Killer, age 10+	*Topologika*	£29
Giant Killer Support Disc	*Topologika*	£24
Glimpse	*Sherston*	£10
Gods	*Krisalis*	£19
Good Impression	*Word Processing*	V0 £25
Granny's Garden	*4mation*	£23
Granny's Garden Resource Pack	*4mation*	£15
GraphBox	*Minerva*	£57
GraphBox Professional	*Minerva*	£104
Graphics on the ARM Machines	*Dabs*	V0 £15
Graph_IT	*Sherston*	£19
Greetings Graphics, draw/sprites	*Micro Studio*	£16
Gribbly's Day Out	*Coin-Age*	£19
GridIT	*Widgit*	£30
Grievous Bodily 'ARM	*Fourth Dim*	£18
Guile	*Dream*	£24
Hard Disc Companion	*RISC*	£45
Hearsay II	*RISC*	£69
HelixBasic	*PDK*	£79
!Help 3, age 13+	*Sherston*	V0 £11
Hero Quest	*Krisalis*	£24
Hilighter, age 8-16	*Sherston*	£32
History Costume, sprites	*Micro Studio*	£16
Holed Out Compendium	*Fourth Dim*	£18
Home Accounts	*Minerva*	£34
House of Numbers	*Chalksoft*	£20
Hoverbod (not OS 3)	*Minerva*	£11
Ibix the Viking (not OS 3)	*Minerva*	£11
I²C SWI	*Baildon*	£15
– bought with Oddule		£5
Illusionist	*Clares*	£69
Illustrators' Graphics, draw/sprites	*Micro Studio*	£16
Image Animator	*Iota*	£68
Image OCR	*Iota*	£POA
Image Outliner	*Iota*	£72
Imagery	*Palette Studio*	£70
Imagine (Version 2)	*Topologika*	£44
Impact!	*Circle*	£47
Impact! Demo	*Circle*	£2
Impression	*CC*	**£117**
– network version		£650
– site licence		£545
– extra hardware key for sites only		£15
– extra manual for sites only		V0 £8
Impression	*Dabs*	V0 £14
– with disc		£17
Impression Borders	*CC*	£19
Impression Business Supplement	*CC*	£39
Impression Junior	*CC*	£65
– site licence		£435
– extra manual for sites only		V0 £7
Insight	*Longman*	£68
Instigator	*Dabs*	£39
Interdictor 2	*Clares*	£26
Investigator 2 (not OS 3)	*Leading Edge*	£21
IronLord	*UBI Soft*	£14
Isle of Wight	*Computer Tutorial*	£20
Ixion	*Software 42*	£21
James Pond	*Krisalis*	£19
Jet Fighter	*Minerva*	£10
Jiglet	*4mation*	£19
Jigsaw	*4mation*	£19
Junior Database	*Iota*	£45
Junior PinPoint	*Longman*	£23
Karma	*Periscope*	£20
Keyboard Player	*Chalksoft*	£17
Keylink Prolog	*Keylink*	£69
KiddiCad	*Oak*	£59
Kid Pix, KS1,2	*ESM*	£35
Knowledge Organiser 2	*Clares*	£79
Krisalis Collection	*Krisalis*	£21
Landmarks – Aztecs, Civil War, Columbus, Egypt, Elizabeth I, Rain Forest, Second World War / Victorians – each	*Longman*	£18
Last Days of Doom / Hezarin	*Topologika*	£17
Last Ninja	*Superior*	£19
Lemmings	*Krisalis*	£19
Letters and Pictures	*Chalksoft*	£20
Lexicon – French, German –each	*Stallion*	£48
Lexicon – Russian	*Stallion*	£56
Limpets	*Computer Tutorial*	£17
Linkword – French, German, Spanish – each	*Minerva*	£37
Little Red Riding Hood, age 5-8	*Selective*	£14
Logo	*Longman*	£55
LogoPlotter	*Longman*	£20
Lotus Turbo Challenge 2	*Krisalis*	£19
Mad Professor Mariarti	*Krisalis*	£14
Magpie	*Longman*	£40
Mah-Jong European – The Game	*CIS*	£19
Mah-Jong Patience	*CIS*	£19
Mailshot	*Minerva*	£27
Manchester United Europe	*Krisalis*	£19
Maps and Landscapes 1	*Chalksoft*	£19
Maps and Landscapes 2	*Chalksoft*	£19
Mark Master	*Chalksoft*	£67
Master Break	*Superior*	£14
Masterfile (Version 3)	*RISC*	£46
Maths Sieve	*Computer Tutorial*	£16
Mazes, drawfiles	*Micro Studio*	£16
Memory Magic	*CIS*	£12
Mental Maths	*CIS*	£16
MicroDrive 2	*CIS*	£25
MicroDrive Designer	*CIS*	£25
Micro Music	*Fisher-Marriott*	£19
MicroSpell 3.XX	*David Pilling*	£5
MicroStudio, age 7+	*EMR*	£67

SPECIAL SUMMER OFFERS!

Valid while stocks last or until further notice

Micro Trader Accounts	PRES	£270
MiG-29 Fulcrum	Domark	£24
Military History, sprites	Micro Studio	£16
Minotaur	Minerva	£8
Missile Control	Minerva	£8
Mogul	Ace	£21
Money Matters	Triple R	£15
Movaword	Chalksoft	£17
MultiFS	Arxe	£27
Multistore version II	Minerva	£125
Myth of Moby Dick	Toppologika	£27
Nature Graphics, draw/sprites	Micro Studio	£16
Naughty Stories (set of 6)	Sherston	£48
Navigator	Topologika	£39
Nebulus	Krisalis	£19
Newton	Longman	£20
Night Sky	Clares	£67
Nominal Ledger	Minerva	£78
Noot	4mation	£41
Noot Art Disc	4mation	£10
Notate	Longman	£42
Note Invaders	Chalksoft	£20
Number 62 Honeypot Lane	Resource	£29
Numbers and Pictures	Chalksoft	£20
Numberscope	Fisher-Marriott	£19
Number Zoo, age 3-6	Selective	£14
Numerator	Longman	£39
Numerator Chaos	Longman	£18
Oak Logic	Oak	£79
Oak PCB	Oak	£79
Oh No! More Lemmings (requires Lemmings)	Krisalis	£15
Ollie Octopus' Sketchpad age 4+	Storm	**£12**
Omar Sharif's Bridge	Krisalis	**£19**
Order Processing/Invoicing	Minerva	£78
Orion	Minerva	£8
Orrery	Spacetech	£93
Ovation	RISC	£84
Overload	Clares	£13
Padlock	ICS	£10
– site licence		£30
Pandora's Box	Fourth Dim	**£15**
Pappus	Computer Tutorial	£17
Paradroid 2000	Coin-Age	£22
PC Access	Minerva	£19
PC Emulator 1.8	Acorn	£93
PDT	Oak	£149
Pendown	Longman	£46
Pendown Etoiles	Longman	£49
Pendown Outline Fonts	Longman	£19
Pendown Plus	Longman	£68
Personal Accounts	Apricote	£29
Perspectives	TechSoft	£44
Pesky Muskrats	Coin-Age	£19
Phonic Games	Fisher-Marriott	£28
Picture Book	Triple R	£15
Picture It!	Appian	£29
– Topic discs	each	£9
PinPoint	Longman	£65
– site licence		£390
PipeDream 3	Colton	£72
PipeDream 4	Colton	£119
PipeDriver Dot 1	ICS	£10
Pipe Mania	Empire	£18
Pirate, age 8-14	Chalksoft	£19
Placard	ICS	£10
– site licence		£30
Plague Planet	Alpine	£13
PlayBack	RISC	£19
Play It Again Sam 1	Superior	£20
Plot	Clares	£POA
Podd, KS1,2	ESM	£27
Podd – Welsh, KS1,2	ESM	£38
Polyominoes	Topologika	£29
Populous	Krisalis	£22
Poster	4mation	£75
PowerROUTER	Silicon	£159
Prehistoric Animals, sprites	Micro Studio	£16
Premier	Circle	£71
– DataBase	Circle	£25
– WordProc	Circle	£25
Presentation Task Force		£POA
Presenter GTi	Lingenuity	£66
PrimeArt	Minerva	£69
PrimeMover	Minerva	£POA
PrimeWord	Minerva	£54
Printer Drivers, RISC OS: BJ-10ex / BJ-200 **TurboDriver** + Cable	CC	**£37**
BJC-800 TurboDriver + Cable	CC	£49
Canon BubbleJet, Canon LBP, Canon PJ1080, ColourCel, Epson JX, Epson ESC-P2, HP, Integrex 132 – each	Ace	£19
Deskjet 500C, Epson / Star colour – each	RISC	£15
ProDrivers: Canon LBP8, Epson ESC-P2, HP Colourjet – each	Ace	£37
ProArtisan	Clares	£71
ProArtisan 2	Clares	£POA
ProCAD	Minerva	£394
Programming in ANSI Standard C on the Archimedes	Sigma	V0 £15
Prophet (requires 2 Mb)	Apricote	£132
Prophet Demo	Apricote	£10
Protext	Arnor	£117
Provocator	Computer Tutorial	£15
Puncman 1 and 2	Chalksoft	£16
Puncman 3 and 4	Chalksoft	£16
Puncman 5 to 7	Chalksoft	£18
Punctuate	Xavier	£31
Punctuate!	Topologika	£25
Purchase Ledger	Minerva	£78
Quest for Gold	Krisalis	£19
QuicKey	ICS	£10
– site licence		£30
Real McCoy 2	Fourth Dim	**£22**
Real McCoy 3	Fourth Dim	**£22**
Real McCoy 4	Fourth Dim	**£22**
Recall, age 8-13	Sherston	£37
Redshift	Minerva	£10
Render Bender 2	Clares	£78
Reporter	Minerva	£29
Repton 3	Superior	£20
Resultz	Colton	£POA
Revelation 1	Longman	£39
Revelation 2	Longman	£75
Revelation 2 CD Rom	Longman	£98
Revelation ImagePro	Longman	£127
Reversals	Chalksoft	£17
Rhapsody 2	Clares	£45
Rhapsody 3	Clares	£79
Rhythm-Bed	Clares	£39
RhythmBox II, age 8+	EMR	£34
RiscBASIC Compiler	Silicon	£79
RiscForth Compiler	Silicon	£79
Risc OS 3 Programmer's Reference Manual	Acorn	V0 £99
Risc OS Companion Vol 1	Oak	V0 £49
Risc OS Extras 1992	Acorn	£9
Risc OS Style Guide	Acorn	V0 £12
RoboLogo	Silicon	£39
Round the World Yacht Race, age 9+	Storm	£27
Sales Ledger	Minerva	£78
Saloon Cars Deluxe	Fourth Dim	£25
– Deluxe Extra Courses	Fourth Dim	£16
S-Base Developer	Longman	**£150**
S-Base Developer Plus	Longman	£275
S-Base Personal	Longman	**£79**
Schema	Clares	£95
Schema 2	Clares	£POA
Science, drawfiles	Micro Studio	£25
Score Draw	Clares	£44
Scorewriter PMS Desktop, age 12+	EMR	£147
ScreenPlay	Widgit	£35
ScreenTurtle	Topologika	£44
Search and Rescue, age 9+	Storm	£27
Seashore Guide, drawfiles	Micro Studio	£16
Seelinks – Ourselves, KS1,2	ESM	£29
Seelinks – Pond Watch, KS2	ESM	£37
Seelinks – Transport, KS2	ESM	£37
Serenade	Clares	£106
ShapeFX	Data Store	£10
ShareHolder	Silicon	£106
ShareHolder Professional	Silicon	£234
ShowPage	CC	£145
Shylock Gnomes, age 10-15	Selective	£16
Sim City	Krisalis	£24
SkyHunter	Longman	£22
smArt	4mation	£50
smArt Aliens, Animals, Dinosaurs, Egypt, Faces*, Fantasy, Fashion, Fiddles & Drums, Heraldry, Homes*, Leisure*, Look Smart, Smartoons, Trees and Gardens *Please specify English, French, German, Spanish or Welsh – each	4mation	£15
smArtFiler	4mation	£32
smArt Modern Languages	4mation	£19
Smudge the Spaniel, age 4-8	Storm	£20
Snippet (new version)	4mation	£32
Soapbox	Xavier	£34
SolidCAD	Silicon	£79
SolidsRender	Silicon	£79
SolidTools	Silicon	£234
SongBook, age 3-10	EMR	£24
Sound Engineer, age 12+	EMR	£59
Sound FX Maker	CIS	£31
Sounds & Rhymes	Xavier	£29
Spark	David Pilling	£5
SparkFS	David Pilling	£20
Sparkle	Morley	£59
Special	ICS	£10
– site licence		£30
Speech!	Superior	**£17**
Spelling week-by-week	Chalksoft	£21
Spex	ExpLAN	£98
Spheres of Chaos	Matt Black	£19
Splash, age 7-11	Sherston	£19
Splice	Ace	£29
Split an Image, age 7-16	Sherston	£16
Spoken Word	Wyddfa	£16
Spooler	Computer Tutorial	£9
Sporting Triangles	CDS	£19
SportsDay	Selective	£22
SportsPeople	Selective	£22
SpriteEd	Computer Tutorial	£17
SpySnatcher	Topologika	£12
Square Route	Computer Eyes	£16
Starspell Plus	Fisher-Marriott	£19
StartWrite	Icon	£55
Stock Management	Minerva	£78
StockPack	Topologika	£37
StoryBook, age 3-10	EMR	£59
StrongED	Stallion	£22
Studio24Plus Version 2, age 11+	EMR	£149
Studio24Plus Version 3, age 12+	EMR	£210
SUMthing	Resource	£19
SuperDump	Silicon	£20
Superior Golf	Superior	£14
SuperPlot	Silicon	£20
Supersounds	CIS	£15
Supersounds 2	CIS	£15
Swiv	Krisalis	£19
System Delta Plus II	Minerva	£50
– Reference Guide	Minerva	V0 £25
TABS	ExpLAN	£95
Talisman	Minerva	£8
Talking Pictures	Wyddfa	£16
Target Maths	Triple R	£15
Technodream (Nevryon 2)	Superior	£20
TechWriter	Icon	£159
Thinklink	Xavier	£29
ThinkSheet	Fisher-Marriott	£38
Thundermonk	Minerva	£11
Tiles	Brain Games	£16
Timeshare	Fisher-Marriott	£19
Timetabler	Minerva	£549
Time Traveller, KS2	ESM	£37
– Britain Since the 1930s, KS2		£32
– The Victorians, KS2		£32
TinyLogo/Draw	Topologika	£34
TinyPuzzle	Topologika	£24
Titler	Clares	£119
Toolkit Plus	Clares	£36
Tools Graphics, drawfiles	Micro Studio	£23
Topographer	Clares	£67
Touch Type	Iota	**£35**
Tower of Babel	Cygnus	£17
Trace	David Pilling	£5
Tracer	Midnight	£46
Tracker	Leading Edge	£37
Transport, drawfiles	Micro Studio	£25
Turbo Type	CIS	£20
Tween	Ace	£30
Twin	Acorn	£24
Twin World	UBI Soft	£14
TWO (Task and Window Organiser)	ICS	£10
– site licence		£30
TypeStudio	RISC	£39
Utility Disc 1	Data Store	£8
Utility Disc 2	Data Store	£13
Utility Disc 3	Data Store	£7
Utility Collection	Data Store	£21
Vector	4mation	£75
View»Mac 3	Human	£65
– Arc/Mac Cable	Human	£24
Viewpoints, age 7-11	Sherston	£37
Visual Backup	Dabhand	£42
Vox Box	Clares	£46
Waterloo (not OS 3.1)	Turcan	£19
Whale Facts	Topologika	£34
WindowEd	Armen	£27
Word Bank	Topologika	£25
Words and Pictures	Chalksoft	£18
WordWorks	CC	£38
Wordz	Colton	£89
World Geography Maps, draw	Micro Studio	£23
World Map Study, age 7-16	ESM	£42
Worldscape	Leading Edge	£17
World Wildlife, sprites	Micro Studio	£16
Worra Battle	Oak	£15
WorraCAD	Oak	£79
Yacht 2	Computer Tutorial	£49
Yacht 7	Computer Tutorial	£94
Zarch	Superior	£14
Zelanites (not OS 3)	Micro Power	£15
Zool	Gremlin	£20

HARDWARE

ICS

051-625 1006

MEMORY . . .

Fitting extra unless otherwise stated
† Fitting farily easy ‡ Fitting needs expertise

A3000 2 Mb Upgradable †	Atomwide/IFEL	£43
A3000 4 Mb †	Atomwide/IFEL	£110
A3010 1-2 Mb	IFEL	**£29**
A3020 / A4000 2-4 Mb †	IFEL	£55
A310 2 Mb Upgradable soldered ‡	IFEL	£88
– as above + MEMC1a		£113
– as above + MEMC1a + fitting		£143
A310 4 Mb soldered + MEMC1a ‡	IFEL	£152
– as above + fitting		£182
A5000 2-4 Mb Non-upgradable†	Atomwide	£85
A5000 2-4 Mb Upgradable †	Atomwide	£99
A5000 2-8 Mb including fitting	Atomwide	£500
A5000 4-8 Mb including fitting	Atomwide	£391
A540 4 Mb †	Acorn	£253

COMPUTERS . . .

A3010 1MB FD Family Solution	Acorn	£420
A3010 2MB FD Learning Curve with Monitor	Acorn	£675
– as above + JP150 Printer		£889
A3020 2MB FD	Acorn	£749
A3020 2MB HD60	Acorn	£899
A4 2MB FD	Acorn	£1395
A4 4MB HD60	Acorn	£1695
A4 4MB HD80	Acorn	£1699
A4 4MB HD120	Acorn	£1799
A4 Extra Battery Pack	Acorn	£50
A4 Shoulder Bag	Acorn	£35
A4000 2MB HD80	Acorn	£945
– as above + Home Office		£995
A5000 2MB HD80 Multiscan	Acorn	£1395
– as above + Learning Curve		£1455
Pocket Book	Acorn	£212

MISCELLANEOUS. . .

386 PC Expansion Card 25 MHz	Aleph One	
– 1 Mb		£374
– 4 Mb		£468
486 PC Expansion Card	Aleph One	
– 1 Mb		£463
– 4 Mb		£557
4-slot 4-layer Backplane	IFEL	£52
9060S Monitor	Eizo	£450
A300/400 Fan kit	ICS	£15
A3000 Expansion Box	Wild Vision	£135
A310 RISC OS Carrier Board ‡	IFEL	£18
A5000 Fitting Kit for second hard disc	ICS	£15
Arckey Function KeyStrip Holder	ICS	V0 £3
– pack of 4		V0 £10
ArcNET	ACS	£69
ARM3 ‡	Aleph One/IFEL	£165
ColourBurst	State	£322
ColourCard	CC	£225
– A3000 External	CC	£225
Dongle Dangle with screw fittings	ICS	£6
Fan filters (pack of 10) (not A5000)	ICS	£6
FaxPack	CC	£289
Floppy Discs, 10 × 3½" High Density		£10
G16	State	£258
G8 Plus	State	£238
G8 Plus Video Switch	State	£23
HiPoint Mouse for A4	Genius	£49
Micro Mouse	Clares	£26
Monitor Stand for A3000	ICS	£21
Podule Case for A3000	HCCS	£16
Print Port Sound Sampler	Leading Edge	£42
Publishing Pack	CC	£475
RISC OS 3 Upgrade	Acorn	£42
– Bulk package	Acorn	£335
– A5000	Acorn	£19
Seal 'n Type spill-proof Keyboard Covers		
– Archimedes / A5000	Kador	£14
– A3000	Kador	£14
TouchWindow	Lindis	£234
Whisper Fan Quietener (for A300/A400 series only)	ICS	£15
Wizzo IDE Filing System on rom	ICS	
– **Wizzo4** for A4		**£29**
– **Wizzo5** for A5000		**£29**

For ordering details please turn to page 3

ICS

051-625 1006

I²C PRODUCTS . . .

AnDi Oddule	*Baildon*	£39
I²C Adaptor (needed unless you already have an I²C socket)	*Baildon*	£10
I²C SWI (enhanced IIC_Control)	*Baildon*	£15
– bought with Oddule		£5

PRINTERS . . .

ArcLaser 300-6	*Calligraph*	£895
ArcServer 300-8	*Calligraph*	£985
Bubble Jet BJ-10ex	*Canon*	£187
Bubble Jet BJ-10ex + TurboDriver	*Canon/CC*	£219
Bubble Jet BJ-20	*Canon*	£255
Bubble Jet BJ-200	*Canon*	£282
Bubble Jet BJ-300	*Canon*	£325
Bubble Jet BJ-330	*Canon*	£405
Bubble Jet BJC-800 + TurboDriver	*Canon/CC*	£1374
DeskJet 500	*Hewlett-Packard*	£299
DeskJet 500C	*Hewlett-Packard*	£375
DeskJet 550C	*Hewlett-Packard*	£475
Laser Direct HiRes4	*CC*	£899
– 250-sheet Paper Cassette		£99
Laser Direct HiRes8	*CC*	£1275
Laser Direct HiRes Board	*CC*	£325
Refill toner cartridge for Canon EPS		£50
New toner cartridge for Canon LBP-4		£59

SCANNERS, DIGITISERS . . .

ArcScanner including Epson GT-4000	*Clares*	£1660
Colour Converter	*Lindis*	£145
FaxScan	*Spacetech*	£94
GreyHawk	*Wild Visiion*	£98
Handipad	*TechSoft*	£173
Hawk V9 MkII	*Wild Vision*	
– standard		£199
– hardware dithered		£259
HiVision Digitiser Colour	*HCCS*	
– A3000 External		£137
– A3000 Series / A4000 Internal		£124
– A5000 / 300 / 400		£124
– Upgrade from Vision		£45
iMage (Sharp JX-100)	*Irlam*	
– for A5000		£490
– for other computers		£589
Image Scanner	*Iota*	£383
– Colour Upgrade Kit	*Iota*	£239
– Fast Parallel Card	*Iota*	£98
i-Scan 200	*Irlam*	£539
i-Scan 400	*Irlam*	£589
Pineapple Colour Video Digitiser	*Pineapple*	£195
– A3000 boxed	*Pineapple*	£230
ProImage (Epson GT6000)	*Irlam*	
– for A5000		£989
– for other computers		£1089
Scan-Light A4	*CC*	£277
– with Sheet Feeder	*CC*	£360
Scan-Light 256	*CC*	£190
– A3000 internal	*CC*	£190
Scan-Light Professional	*CC*	£565
– as above + SCSI interface	*CC*	£699
SnapShot Colour Video Digitiser	*Lingenuity*	£195
– A3000 version	*Lingenuity*	£275
Spectra	*RISC*	
– Archimedes / A5000		£545
– A3000 Series / A4000 Internal		£545
– A3000 External		£555
Vision Digitiser	*HCCS*	
– A5000 / 300 / 400 Mono		£48
– A5000 / 300 / 400 Colour		£76
– A3000 External Mono		£60
– A3000 External Colour		£89
– A3000 Series /A4000 Internal Mono		£48
– A3000 Series / A4000 Internal Colour		£76

"You wonder how you ever managed without QuicKey."

NOW ONLY £10

"Congratulations on ColourSep! The results, compared with the drivers currently available, are bordering on the fantastic."

NOW ONLY £15

"TWO is the best thing I've ever bought."

NOW ONLY £10

As well as letting you type all those extra characters, Special is the easiest way to examine new fonts.

"DrawBender is quite stunning."

NOW ONLY £10

Padlock is our top seller for simple disc security.

"Fontasy offers a wider range of effects than FontFX. It is a package for the perfectionist, whether professional or enthusiast."

NOW ONLY £15

HOW TO ORDER

VAT: Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.

Overseas carriage: If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

Credit cards are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

Official orders are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

Site licences are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.

AUTHORISED ACORN DEALER

ICS (Ian Copestake Limited)

Dept AC10, 1 Kington road, West Kirby, WIRRAL, Merseyside, L48 5ET

Tel: 051-625 1006 Fax: 051-625 1007

E&OE D61 93MY20

LICENSED CREDIT BROKER

ARM POWERED engines

IF it is your habit to look at PC magazines or advertising you may have come across the *Intel Inside* branding for computers that use the 386, 486 and, eventually, Pentium chips made by Intel.

This has become a necessity for Intel because so many chip manufacturers are producing cheaper chips that perform the same function. For them the situation has become critical so they want the customer to buy PCs that have their chip – sound economics, of course.

Branding works by having some symbol or word that is easy to recognise and by splashing it around so heavily that the symbol becomes identified with the product – Intel's ultimate aim is to have the customer believe that if it doesn't say *Intel Inside* on the box it isn't a *PC* in the box.

As a curious sideline the TV advertising emphasised the *software* with the subtle implication that if it doesn't say Intel Inside on your computer it won't run the software you want. Intel would never be able to convince software producers to build that kind of limitation into the potential market provided by non-Intel machines.

Acorn have never been too hot on marketing and the concept of branding really doesn't enter the picture: *If it hasn't got an ARM chip it isn't an Acorn* ... well there could be some possibilities, or at least there *would* have been if, three years back, Acorn Computers hadn't hived off chip design and manufacturing into their subsidiary ARM Ltd in the co-venture with Apple and VLSI (the chip's manufacturers).

Separating ARM Ltd from Acorn was important because while they were combined it was extremely unlikely that any other manufacturer would use the ARM chip in any other application. No one pays money to their opposition if they have a choice.

But with ARM Ltd as an entity in their own right – particularly with two different computer companies as owners – it's much less painful for a third party to decide on the ARM chip.

The ARM chip has a number of very attractive features: It has a modular design so it can be customised for particular applications, it's fast and, best of all, it's cheap. No one pretends it has the same performance as a DEC Alpha chip, but it's much more versatile and doesn't generate 60W of heat – the equivalent of an average light bulb.

The joint venture has succeeded and while Acorn put bog-standard ARM250s and ARM3s into their computers and Apple fit their Newton's with ARM610s, the rest of the world are beginning to notice ARM Ltd and their impressive array of hardware.

You may have come across 3DO and wondered what it is and why it increased Acorn's share value by nearly eight times. 3DO is a partnership between commercial giants like Matsushita, AT&T, Time Warner, MCA and Electronic Arts with the aim of creating a consumer electronics standard for home multimedia. This standard will be licensed to any company who wants to produce a compatible product.

So while the Sega Mega CD is storming into homes at exorbitant prices and making pots of money for one company, 3DO allows companies to produce compatible products in competition with each other which will, theoretically, push down the price.

The processor at the heart of the 3DO Interactive Multiplayer (the first hardware should be available this autumn) is an ARM chip but let's put it in perspective: The ARM chip is surrounded by a whole pile of specialist graphics chips that do all the hard work, the development system is on Apple Macs not on Acorn machines and in the massive press pack produced by 3DO the word ARM does *not* appear even once.

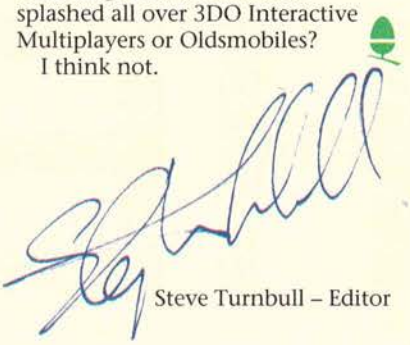
The latest deal that ARM Ltd have been able to tie up is with Texas Instruments, the sixth largest semi-conductor manufacturers in the world. And where do TI want to put ARM chips? In cars.

TI will actually put the core processor into integrated chips which have all the other bits they need. The code run by the processor will be hard-wired into the system as well.

These licensing deals mean a lot of money to ARM Ltd and their parent companies, Acorn included, but there's little recognition of the company or product. In the PC market you have multiple processor manufacturers producing the same chips, hence Intel produced the branding *Intel Inside* to encourage their own sales.

ARM Ltd have come up with their own branding – ARM Powered – which is available to any company that produces a product that uses an ARM chip. But will we see it splashed all over 3DO Interactive Multiplayers or Oldsmobiles?

I think not.



Steve Turnbull – Editor

What does the success of ARM Ltd mean for Acorn? Steve Turnbull takes a look

Editor Steve Turnbull **Art Editor** Julian Marshall **News and Reviews Editor** Pam Turnbull **Technical Editor** Mike Cook **Chief Sub Editor** Alan McLachlan
Assistant Advertising Manager Emma Barr **Advertising Production** Antony Allen, Andrew Southam
Director of Advertising John Snowden **Circulation Manager** David Wren

Tel: 0625 878888 (All depts.) 051-357 2961 (Subs.) Fax: 0625 879966
Published by: Europress Publications Limited, Europa House, Adlington Park, Macclesfield SK10 4NP.

europress PUBLICATIONS

Chairman Derek Meakin
Publishing Director Robin Wilkinson
Financial Director Tim Roberts

Acorn Computing welcomes new program listings and articles for publication. All material should be supplied on disc and printed. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

Acorn Computing is an independent publication and neither the BBC nor Acorn Computers Ltd are responsible for any of the articles in this issue or for any of the opinions expressed.

ABC Member Audit Bureau of Circulation

© 1993 Europress Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken, the publishers cannot be held legally responsible for any errors in articles, listings or advertisements.

News Trade Distribution: Comag 0895 444055

Printed in the UK by BPCC Magazines (Carlisle) Ltd

NOW YOU CAN AFFORD THE BEST

DISC PARTITIONS

MULTI-LEVEL PASSWORD PROTECTION

RISC OS 3 COMPATIBILITY

2 Mb/sec

2 Mb/sec speed barrier broken by ICS IDE filing system!

So fast, they're calling it

WIZZO *(it's magic)*

Now also available as a plug-in filing system on rom –

WIZZO4 for the A4, and

WIZZO5 for the A5000

LAUNCH PRICE ONLY £29

EXAMPLE ideA PRICES

Archimedes Internal 120 Mb Complete Upgrade	£299
Archimedes Internal 170 Mb Complete Upgrade	£340
Archimedes Internal 540 Mb Complete Upgrade	£899
A3000 Series Internal 40 Mb Complete Upgrade	£225
A3000 Series Internal 120 Mb Complete Upgrade	£425
540 Mb Low-Profile IDE Hard Disc	£825

Other upgrades and sizes available – please enquire

All prices exclude VAT and are subject to variation • Dealer enquiries welcome

ICS

051-625 1006

ICS (Ian Computers Limited), Dept AC10, 1 Kingston road, West Kirby, WIRRAL, Merseyside, L48 5ET

GET AN EXTRA DISK free!

Ensure your copy every month – SUBSCRIBE NOW

The new-look *Acorn Computing* is selling faster than cold beer at a cricket match. So make sure you get YOUR copy each month – either by placing a regular order with your newsagent or by taking out an annual subscription.

As a subscriber you will get an extra bonus. Not only will you have the Acorn magazine acclaimed that's for having the best cover disks of all, but you will receive an exclusive EXTRA FREE disk packed with software for either 32-bit or 8-bit machines.

If you have a 32-bit machine, your special subscriber disk will be brimming with utilities, excellent public domain software, games, demonstrations and much more.

If you have an 8-bit machine, such as the BBC B or Master, your special disk will contain ingenious and new programs written specially for the machines – PLUS you get a 20% discount on the subscription price.

Quantity and quality – that's got to be a combination you cannot ignore!

MegaDisks for 32-bit users are packed with top programs covering entertainment, utilities, desktop publishing and graphics, programming and education. Recent MegaDisks have included:

- *Interdictor flight simulator worth £36*
- *Key Word worth £30*
- *DataVISION® Lite worth £50*
- *Badger Trails educational adventure*
- *Zool – exclusive level from Gremlin Graphics*

Look what you get when you subscribe!

- Bigger cash savings on reader offers
- Never miss a copy, it's guaranteed every issue
- Delivered FREE to your door
- Beat inflation price rises
- No risk. You may cancel at at any time and we'll refund all unmailed issues.

BEST VALUE FOR YOU!

Acorn Computing is acclaimed the brightest and best read magazine for all Acorn users, helped by occasional special supplements and great reader bargains offers that save you £££s.

Month after month readers are presented with informed opinion covering all aspects of Acorn computing. Hardware and software is reviewed by top experts in their fields – people at the sharp end whether they are teachers, games players, graphic artists or technical experts.

It's packed with vital hints and tips and the very latest news on new hardware and software products. Steering clear of jargon, our technical writers use their extensive knowledge to help you make the most of your machine as well as setting challenges for the more adventurous.

COMPLETE THE ORDER FORM AND SUBSCRIBE NOW

Which subscription?

12 issues	Acorn Computing cover disk + subs disk	Acorn Computing and 40T BBC disk	Acorn Computing and 80T BBC disk
Subscription – *UK*	£34.95 ☐ 2552	£26.95 ☐ 2555	£26.95 ☐ 2558
Subscription – *Europe/Eire*	£49.95 ☐ 2553	£41.95 ☐ 2556	£41.95 ☐ 2559
Subscription – *Overseas*	£64.95 ☐ 2554	£56.95 ☐ 2557	£56.95 ☐ 2560

Deliver my magazine to

Name: _____

Address: _____

_____

Postcode: _____ Tel No: _____

☐ *Please tick if you do not wish to receive promotional material from other companies*

How to pay

☐ I enclose a Cheque/Eurocheque payable to Europress Publications Ltd

☐ Please debit my Credit Card Signed _____

No ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Expires ☐☐/☐☐

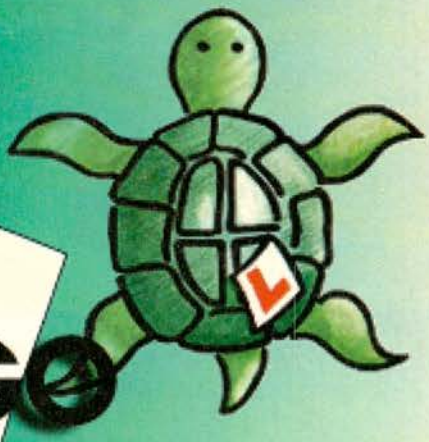
Please return to:
Europress Direct, FREEPOST, Ellesmere Port, L65 3EB

You can also order through our 24 hour hotline:

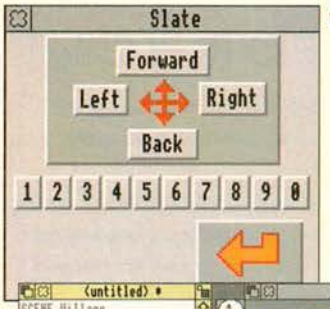
Phone: 051-357 1275 Fax: 051-357 2813

A Beginner's Guide to Logo...

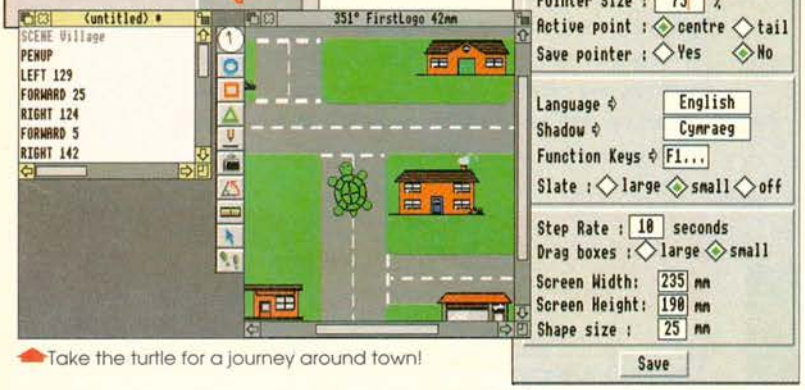
FIRST LOGO



Single User £24.00
Primary Site Licence £72.00
Secondary Site Licence £120.00
excluding VAT

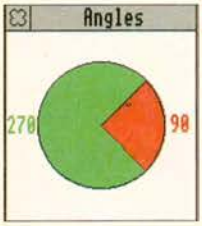


Slates allow easy entry of commands, simply by clicking



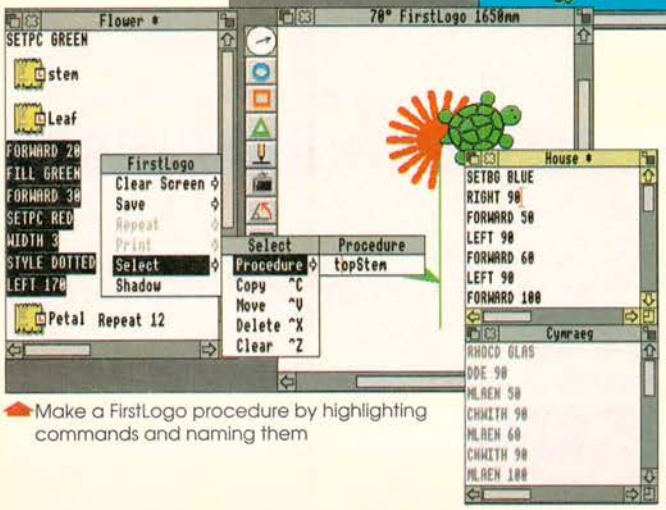
Take the turtle for a journey around town!

A large range of options make FirstLogo easy to configure for specific needs



Just point and click to measure an angle or distance

There are many exciting activities to try, such as this UK based map activity



FirstLogo commands can be entered in English, French or Welsh

Make a FirstLogo procedure by highlighting commands and naming them

- Commands are input via the keyboard, slate, or - *using the unique interactive turtle* - dragging the pointer round the screen.
- Standard RISC OS environment for ease of use and familiarity.
- Intuitive and highly visual creation and manipulation of procedures.
- Easily accessible activity based documentation.
- "Tool Kit" for quick drawing of geometric shapes, measurement of work and input of common commands.
- Unique "step" feature allowing commands to be executed one at a time with user-definable delay between each one.
- Simultaneous translation of commands between English, French and Welsh.
- One-to-one match between screen measurements and printed copy.
- FirstLogo doesn't pretend to replace the power and functionality of a full implementation of Logo, but does offer a valuable and unique Logo first step for beginners of all ages.

For further details please contact the sales department at:

Longman Logotron
124 Cambridge Science Park
Cambridge
CB4 4ZS
Tel: (0223) 425558
Fax: (0223) 425349

LONGMAN LOGOTRON

Hot off the press

ACORN have signed a marketing deal with AB Dick of Germany to sell the Pre-Press system in Germany following a similar deal a few month ago with AB Dick in The Netherlands.

The package comprises an Acorn 32-bit machine, 256 level greyscale scanner, A3 or A4 direct drive laser printer and Impression software with 200 outline fonts and postscript drivers. Prices start from DM18,200 or

Data transfer

CIRCLE Software's (0793 770021) shareware database, Impact, has been such a success that they have released Impact-Pro aimed at the more professional database user who requires more advanced features.

Impact-Pro is a fully commercial package which retails for £65, though users of Impact can upgrade for just £15. The original Impact will now only cost £39.95.

This fully relational database comes with a host of new features including improved report generation via Impression, merging of tables and calculations, field selections can be stored to produce labels and reports with live calculations on record cards and reports.

In addition there is flexible field mapping during import and export and direct multi-column label printing, sprite fields for picture display and multi-line text fields.

Humane Midi

ROBERT Treen, former technical consultant on the TV series Micro Live and The Software Show has yet to come across a successful Midi tutorial. "They're overpriced, boring and uninformative", he says. So much so that he is planning a definitive video guide Midi for Humans.

This will be a mammoth three-hour video production aimed at generic Midi users from the home enthusiast to the professional musician. The aim is to pack the video with useful facts but in a fun and informative manner.

Robert is in the process of assembling his team as well as obtaining sponsorship from hardware and software companies to keep down the cost to the customers. So if you're interested in finding out more or taking part contact RTPS Systems (0869 278470).

LEADING education house, Sherston, pull off adventure game coup as they get the rights to convert Chatsworth Television's hit series to Acorn machines.

The game is being programmed in New Zealand by Jellyfish Design.

It's due for release at the Acorn World Show in October. But what does Mumsie think?

Q-ing for new wave art

CAMBRIDGE International Software (071-226 3340) have released three very different products. Photopia is aimed at anyone who wants to manipulate 256 colour sprite files quickly and effectively with the minimum of knowledge.

This image processor uses two buffers to change the colour saturation, rotate, fade, add ripples, mask certain colours and so on. Experimenting is easy and you can save your sprites for use in other applications. Fully multi-tasking Photopia costs £49.95.

Q-Paint is still under development but early views look quite promising for an art package with a plethora of tools, fills, warps, tints and dithers. Pictures are created in Mode 13 and though the package isn't available on the desktop, the interface is used for file handling.

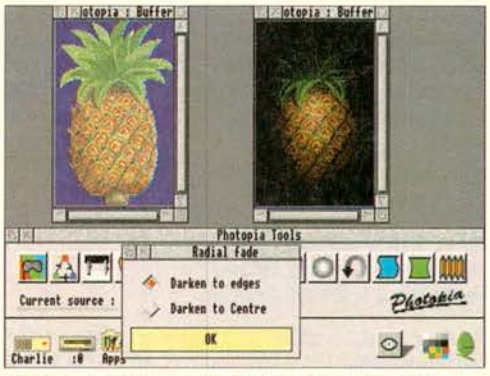
CIS have incorporated split screen magnification, perspective and the ability to edit two pictures at the same time. Anti-aliased fonts are supported and the price is £89.95 inc VAT.

For £19.95 you can have a taste of two games from the early arcades with Humanoids and Robotix in CIS' Arcade Classic Range.

Humanoids will be familiar to anyone who's play Defender with you thrusting around the universe destroying alien vessels and trying very hard to survive.

Keeping alive is also the theme of Robotix where you must guide a motley crew of humans to safety, avoiding robots and potentially dangerous obstacles.

In the same range of software is Killerbugs which takes the old favourite Swoop to the 32-bit, combining smooth graphics and fast fingerwork in a space-invaders type game.



● *Image processing made easy with Photopia*

● *Killerbugs lets you indulge in some classic fun*

Small is beautiful when expanded

PINEAPPLE Software (081-599 1476) have an internal/external Mini Expansion Adapter providing an external adapter socket for the A3000, A3010/20 and A4000 with the same signals as the A3000 expansion port.

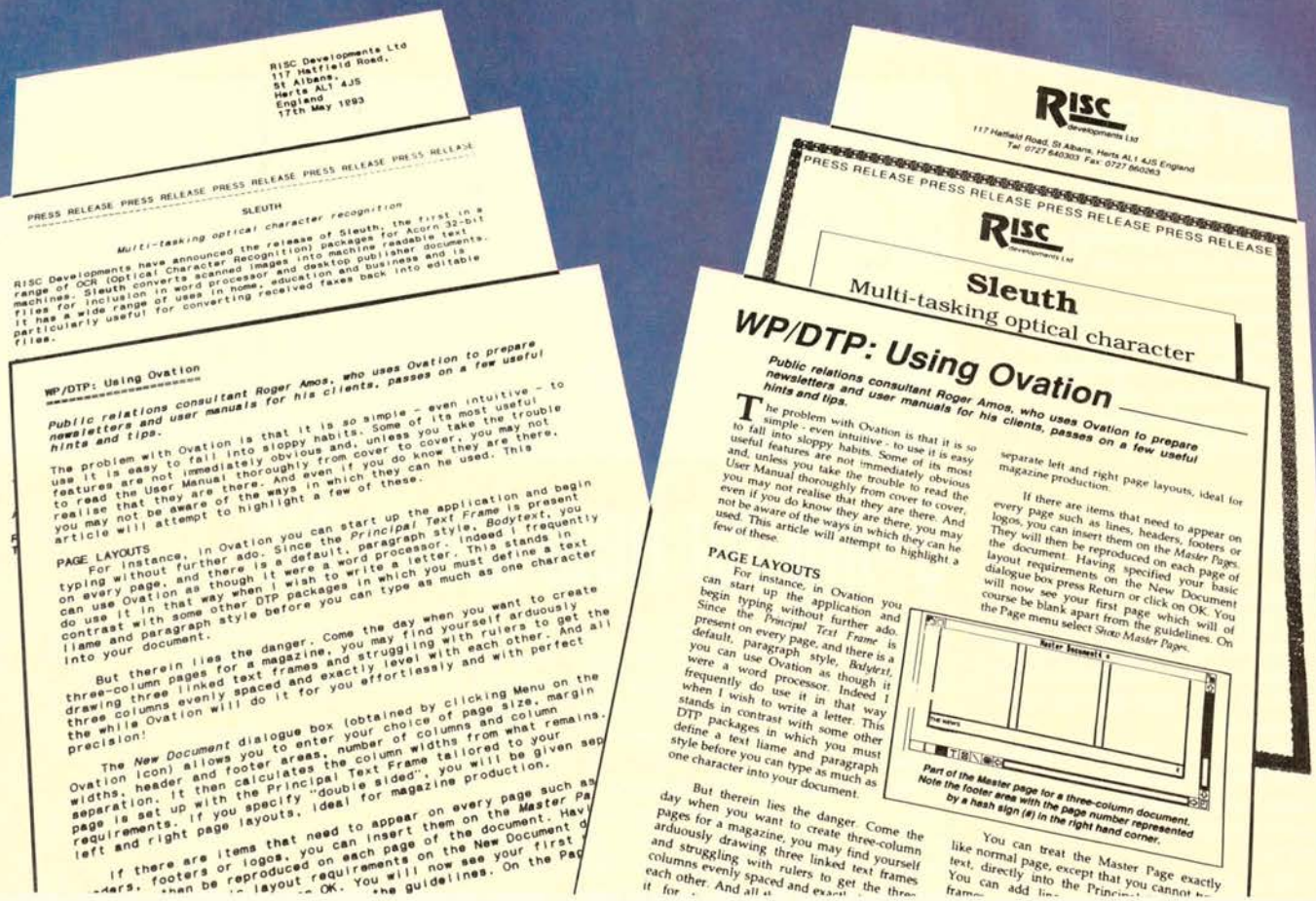
For an A3000 this provides a second external expansion socket. Called the MEA/2 it will cost £28.

With this expansion adapter much of the hardware that only works with the A3000 will now function fully on the newer machines.

In addition the new hardware has special provision to connect to the new Pineapple Genlock/Titling video system.

At the same time Pineapple are renewing production of their popular PAL Coder unit, the PLC/2.

Get Smart!


RISC Developments Ltd
117 Hatfield Road,
St Albans,
Herts AL1 4JS
England
17th May 1993
PRESS RELEASE PRESS RELEASE PRESS RELEASE PRESS RELEASE PRESS RELEASE
SLEUTH
Multi-tasking optical character recognition
RISC Developments have announced the release of Sleuth, the first in a range of OCR (Optical Character Recognition) packages for Acorn 32-bit machines. Sleuth converts scanned images into machine readable text files for inclusion in word processor and desktop publisher documents. It has a wide range of uses in home, education and business and is particularly useful for converting received faxes back into editable files.
WP/DTP: Using Ovation
Public relations consultant Roger Amos, who uses Ovation to prepare newsletters and user manuals for his clients, passes on a few useful hints and tips.
The problem with Ovation is that it is so simple - even intuitive - to use it is easy to fall into sloppy habits. Some of its most useful features are not immediately obvious and, unless you take the trouble to read the User Manual thoroughly from cover to cover, you may not realise that they are there. And even if you do know they are there, you may not be aware of the ways in which they can be used. This article will attempt to highlight a few of these.
PAGE LAYOUTS
For instance, in Ovation you can start up the application and begin typing without further ado. Since the Principal Text Frame is present on every page, and there is a default, paragraph style, Bodytext, you can use Ovation as though it were a word processor. Indeed I frequently do use it in that way when I wish to write a letter. This stands in contrast with some other DTP packages in which you must define a text flame and paragraph style before you can type as much as one character into your document.
But therein lies the danger. Come the day when you want to create three-column pages for a magazine, you may find yourself arduously drawing three linked text frames and struggling with rulers to get the three columns evenly spaced and exactly level with each other. And all the while Ovation will do it for you effortlessly and with perfect precision!
The New Document dialogue box (obtained by clicking Menu on the Ovation icon) allows you to enter your choice of page size, margin widths, header and footer areas, number of columns and column separation. It then calculates the column widths from what remains. page is set up with the Principal Text Frame tailored to your requirements. If you specify "double sided", you will be given sep left and right page layouts, ideal for magazine production.
If there are items that need to appear on every page such as footers or logos, you can insert them on the Master Pa then be reproduced on each page of the document. Hav layout requirements on the New Document d OK. You will now see your first the guidelines. On the Pag
RISC Developments
117 Hatfield Road, St Albans, Herts AL1 4JS England
Tel: 0727 840303 Fax: 0727 860263
PRESS RELEASE PRESS RELEASE PRESS RELEASE
Sleuth
Multi-tasking optical character
WP/DTP: Using Ovation
Public relations consultant Roger Amos, who uses Ovation to prepare newsletters and user manuals for his clients, passes on a few useful hints and tips.
The problem with Ovation is that it is so simple - even intuitive - to use it is easy to fall into sloppy habits. Some of its most useful features are not immediately obvious and, unless you take the trouble to read the User Manual thoroughly from cover to cover, you may not realise that they are there. And even if you do know they are there, you may not be aware of the ways in which they can be used. This article will attempt to highlight a few of these.
PAGE LAYOUTS
For instance, in Ovation you can start up the application and begin typing without further ado. Since the Principal Text Frame is present on every page, and there is a default, paragraph style, Bodytext, you can use Ovation as though it were a word processor. Indeed I frequently do use it in that way when I wish to write a letter. This stands in contrast with some other DTP packages in which you must define a text flame and paragraph style before you can type as much as one character into your document.
But therein lies the danger. Come the day when you want to create three-column pages for a magazine, you may find yourself arduously and struggling with rulers to get the columns evenly spaced and each other. And all it for
separate left and right page layouts, ideal for magazine production.
If there are items that need to appear on every page such as lines, headers, footers or logos, you can insert them on the Master Pages. They will then be reproduced on each page of the document. Having specified your basic layout requirements on the New Document dialogue box press Return or click on OK. You will now see your first page which will of course be blank apart from the guidelines. On the Page menu select Show Master Pages.
Part of the Master page for a three-column document. Note the footer area with the page number represented by a hash sign (#) in the right hand corner.
You can treat the Master Page exactly like normal page, except that you cannot text, directly into the Principal You can add

Transform documents with Ovation, the acclaimed desktop publisher.

If its time you smartened up your documents, Ovation with its superb range of facilities and competitive price is the ideal choice. In no time at all, we guarantee you will be producing professional-looking documents using a wide range of typefaces in different sizes and styles and with pictures added too. It is already used on thousands of sites across the country for producing a wide range of documents ranging from simple letters to complete books. Ovation produces excellent results on a range of printers including dot-matrix, inkjet and for professional results, laser.

All the facilities you would expect in much higher priced software are provided, but in an easy-to-learn and easy-to-use package. There are too many features to list here, so please write or phone for a full specification.

Ovation comes with a comprehensive 250-page user guide, widely regarded as an excellent introduction to desktop publishing. It includes a concise guide to getting started, plus a detailed description of all Ovation's features. Advanced sections cover desktop publishing techniques, document design and printing.

ovation

Please phone for education and site licence prices.

A working demonstration version of Ovation is available for £5 inclusive (refundable on purchase of full package).

FREE Thesaurus

Buy Ovation now for a FREE copy of Desktop Thesaurus, the best selling word-finder for Acorn machines. It contains over 17,000 keywords and 180,000 carefully chosen alternative words. Desktop Thesaurus integrates fully with Ovation, providing a very powerful word processing tool.

SPECIAL Introductory OFFER

Save over £20 on Ovation and get a free copy of Desktop Thesaurus worth over £20.

This represents a total saving of over £40!

Total inclusive price only £99
Price includes VAT and carriage.

This offer only applies to single-user copies of Ovation bought at full retail price directly from RISC Developments. Offer ends July 31st 1993.

RISC developments

RISC Developments Ltd 117 Hatfield Road, St. Albans, Herts AL1 4JS Telephone 0727 840303 Fax 0727 860263

Diary date

RISC Developments (0727 840303) are holding an Open Day in their St Albans offices this year on Sunday June 27 from 10am to 4pm.

As well as all the latest releases, such as the Sleuth OCR and Easy C software packages, you'll be able to see their network system in action including a Twisted Pair Ethernet card which connects directly to a twisted-pair 10BaseT Ethernet installation through a standard telephone-type connector. There's also a new user port and analogue and Econet card for the A5000.

Other companies will be showing off their wares and you can also meet the editorial team from *Acorn Computing*.

Learn to draw

IF YOU have bought ArtWorks and feel that you're not getting the most out of it, contact Minerva (0392 426160). The Exeter-based software house have a training wing and they are about to start their ArtWorks courses.

They last a day and are held in their Exeter Training Centre in well equipped and comfortable surroundings. Classes are restricted to four people and the £110 fee includes refreshments, lunch and the comprehensive course and reference materials. Overnight accommodation can be arranged.

Norse adventure

SHERSTON Software (0666 840433) are following the success of ArcVenture I and II with the third in the series – The Vikings and costs £31.95.

ArcVenture III is aimed at 7-11 year olds and uses the familiar format with some new features including an introductory Viking movie sequence complete with atmospheric soundtrack.

The adventure starts at Coppergate in York and with your computer's aid you reconstruct artefacts and travel back in time to explore and question people.

Between May 1976 and September 1981 a large archaeological dig took place to find out more about the people who lived in York hundreds of years ago.
Continue

● *Venture back in time with ArcVenture III*

Networking for all

FROM the way Acorn networks are marketed you may be excused if you think that schools are the only interested parties. This has been true but change is in the air since the availability of cheaper Ethernet solutions and exciting new connectivity products.

Atomwide's (0689 838852) range of network Ethernet cards is now available for all full and mini-podule machines for all your Ethernet interfacing. As parallel and serial port versions are available, this is good news for people with A4s especially as prices start at under £100.

Aleph One – associates of Atomwide – are working on Novell client software for the Acorn 32-bit machines. This *Novell client for Risc OS* package will appear as a Novell icon on your iconbar and give you access to a true Novell network.

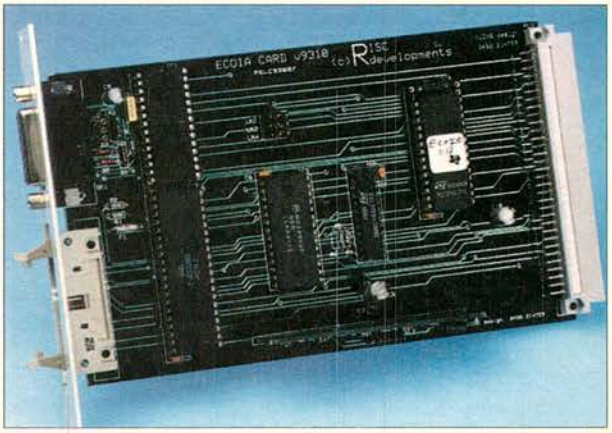
For software producers, **Computer Concepts** (0442 63933) have released new versions of their Impression and ArtWorks package to be AUN compatible. This means that you can run them in a variety of networks without the dongles.

Computer Concepts alone have now sold more than 3,000 site licences in the Acorn market as the average number of machines per site increases. But for sites with Ethernet, AUN compatibility ensures that the same software will work regardless of the hardware.

ACS (0582 20604) now have their ArcNet on sale and already installed in a number of schools. The system uses existing Econet cabling and claims increases in networks speeds of up to 13 times with prices starting at £69, though as ArcNet uses AUN you will need Risc OS 3.

There are three interface boards starting with the Econet replacement board which fits into the sockets vacated by Econet.

The new cards for **Oak Solutions** (0954 211760) combine ClassNet and ClassRom providing protection and management of internal hard disks as well as allowing their connection to high speed Ethernet networking.



● *New all-in-one Ethernet Card from Risc Developments*

ClassRom is able to partition internal ADFS and IDE drives providing one for applications which is read-only and password protected by the teacher and a second for scrap and temporary files which is read/write.

ClassNet provides access to Ethernet with the Level 4 File Server and Printer Spooler products as well as management of all the ClassRom hard disks. The combined single card starts at £179.

Risc Developments (0727 840303) are continually adding to their range of network cards. In addition to their Ethernet cards featured last month, they have launched a half-width version of the A3000 combined user port, analogue and Econet card for the A5000 and standard Acorn machines.

The card provides rear connector for the user port and analogue interfaces but unlike the A3000 version, the separate Econet connector is replaced by an internal cable which links to the existing Econet socket.

The Econet interface offers a cost saving over buying a separate Econet card and includes a boot rom so the computer can be used on a AUN network without booting from disk – the cost is £79.95.

Practise write away

FOUNDATION Calligrapher is a new software package with the aim of teaching children to write. The program costs £15 and the font £8 and both come from Design Concept (031-668 2000) and slowly illustrate the motions required for each letter on screen so that children can copy them.

Foundation Calligrapher uses Design Concepts Foundation outline font which was developed in association with Jordanhill College to teach writing skills as the letter shapes are arranged to look natural while encouraging correct formation. This brings the letters used in the Foundations of Writing Letter Forms scheme – used by thousands of schools – to the Acorn machines.

The Calligrapher system is very versatile with teachers able to prepare different groups of phrases. They can control the speed of the animation, size and colour of the text and even change these as the children progress through a group of phrases.

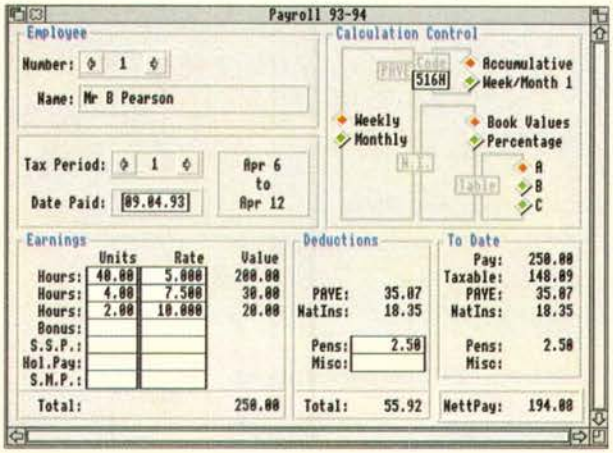
Calligrapher can be used with any modified font and Design Concept will adapt any of their fonts at no extra cost.

Put an end to those payroll blues

● *Multitasking Payroll Manager takes the pain out of pay day*

SILICON Vision (081-422 3556) have announced the release of their complete Payroll Manager, a multi-tasking program for the 32-bit machines.

Facilities include employee record searching, individual rates of pay and tax codes as well as record locking for security whether you use it on its own or to complement your existing accounting software.



The software has been in development and on trial for over two years and the final version supports weekly and monthly wages, book or percentage values, wage slips, cash breakdown, end of year P14/P60, pension deductions, holiday pay and an employee record search facility.

There's accumulative or week 1/month 1 basis, tables A, B or C, deductions, working sheets, total employer expenses, SSP and SMP, three rates of pay per person per period plus bonus and security record locking. Capacity is limited only by available space.

Payroll Manager v2.0 handles all the latest Budget changes for the year 1993/4 with future updates provided by an annual registration fee and the package will cost you just £99.95 including VAT.

● *Amazing Maths combines number bonding with adventure*

Number bonding

IT USED to be called multiplication tables but it's now termed number bonding and Cambridgeshire Software House (0480 467945) have designed Amazing Maths to reinforce this process.

The program can be tailored to suit a child's individual needs and caters for multiplications, division, addition and subtraction. Facilities have been built-in so that teachers and parents can record all the answers so that they can see where their children need that extra help. Amazing Maths is an adventure of mazes and can be controlled by mouse, keyboard, touch screen or concept keyboard and costs £19.95.

Picture power in volume

● *Image Gallery's search facility is easy to use and access*

THE beauty of CD-Roms is the quantity of information you can store on them. This is particularly important when dealing with high quality graphics and scanned images which take up considerable amounts of space.

Mark Roberts from Eesox (0223 264242) has taken advantage of this medium with his new Image Gallery.

The CD-Rom contains over 1,100 colour images each image stored in full and in a smaller version which is useful for previewing. The subjects covered include transport, animals, people and buildings with search and retrieval software for the Acorn, IBM PC and Commodore Amiga for £45.

For anyone involved in producing CD-Roms, Eesox have a CD Simulator designed to help you create and test CD-Rom applications at all stages, and accurately simulates the transfer rates and seek times.

The CD Simulator allows you to create a CD-Rom image of your application to any storage media. It will then let you test your applications and its data as if it was running directly from a CD-Rom disk.

The CD Simulator can be bought separately or as a complete package including SCSI interface, CDFS and SCSI hard disk system.

Moving on

Summer is a good time to move as the following companies have discovered. Here's who they are and where you can find them:

The Electronic Font Foundry, Gibbs House, Kennel Ride, Ascot, Berkshire. Tel: 0344 891355.

MicroLaser Designs, The High Street, Paulton, Bristol, Avon BS18 5QE. Tel: 0761 410711.

Oak Solution, Broadway House, 149-151 St Neots Road, Hardwick, Cambridgeshire CB3 7QJ. Tel: 0954 211760.

Primary voyage

ACORN have launched an integrated computer curriculum pack aimed at the primary education sector. Called the Discover pack it is built around the A3020 and pre-installed on the hard disk is a range of software from the integrated suite Advance, to Sherston's Crystal Rainforest, Longman's Magpie and two Replay video clips.

Teacher support materials have been commissioned from Hampshire's Primary IT advisory team. The pack also comes with an intriguing heat sensitive mouse mat, an audio training tape plus educational product directory, wall planners and discount vouchers all for £1,149.

In the pipeline

TBA Software (0970 626785) are not resting on their laurels but are hard at work on their next releases Psycho Squadron which is similar to Uridium and features extended vertical scrolling for larger play-fields and special bonus levels.

Also under development is Free Run – on their Powerstation label – a futuristic race game between small anti-grav skimmers around race tracks on several different planets. Free Run will feature TBA's *RotaVision* an ultra-fast 3-D distortion routine to give a first-person view of massive bitmap race-tracks. Both games are due out this summer.

Out-of-house design

IF YOU haven't the time to design and print your own DTP work, DigiTech Designs (0724 852701) can help. They will design anything from posters to stationery on their 32-bit Acorns and return the results as a PostScript file or in an application-specific file, or take the design to the hard copy stage for you.

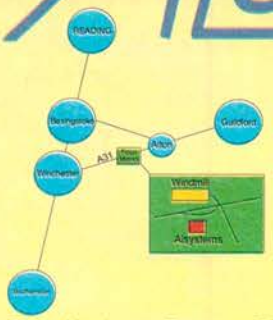
Authorised Education Dealers

PHONE NOW

0420 561111

Alsystems

47 Winchester Road
Four Marks
Alton
Hants GU34 5HG

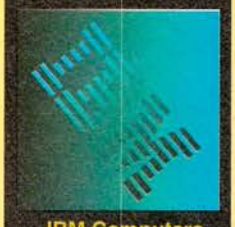


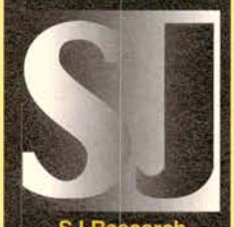
Acorn Open Day

Saturday July 17th
10 am until 4 pm

Featuring Acorn, Computer Concepts, Morley Electronics, State Machine, and many more.

Why not come along and see the latest machines from Acorn and have a chat to some of our guests. The venue is The Windmill Inn, Four Marks, opposite our showroom.





NEW **Attention all schools** — **Acorn XChange**

We are currently offering very competitive educational discounts off the complete range of Acorn and related products. Why not give us a ring on 0420 561111 for our discounted educational prices.

VISA

HelixBasic

HelixBasic is a language which performs all the 'house keeping' tasks of the RISC-OS environment (leaving you free to concentrate on the functionality of the program) and provides many new features.

A versatile program editor allows the easy creation of windows and menus with the linking of different sections to normal BASIC code.

- ✔ *Easy and intuitive program development*
- *Transparent interface to RISC OS*
- ✔ *Provides control of text, graphics, sound and animations*
- ✔ *Unlimited length strings*
- ✔ *Advanced data structures*
- ✔ *Fast and efficient operation*
- ✔ *Fully RISC OS compliant*

£99.95

Amazing Maths

This easy to use program is competitive and fun to play. You must complete the maze by searching levels and answering maths questions along the way. The question difficulty can be altered to suit individual needs.

- *Concept Keyboard* ✔
- *Number Bonding* ✔
- *Multiplication & Division* ✔
- *Addition & Subtraction* ✔

Amazing Maths is a joint development between Cambridgeshire Software House and PDK Technologies.

£19.95

PDK Technologies, 4 Meadow Way, Ampthill, Bedfordshire, MK45 2QX
Telephone : (0525) 403541 Access & Visa Welcome

Publishing power

COMPUTER Concepts (0442 63933) have put together a package called the Publishing Pack comprising a ScanLight 256, Canon BJ-200 printer and Impression Junior. Bought separately you'd pay £618 but together they cost just £475.

All you need is any Acorn 32-bit machine with 2Mb ram and an expansion card slot with a special version for A3000/A4000 owners with an internal expansion card.

Captured on film and video

COLLABORATION between Wild Vision (091-519 1455) and Computer Concepts saw the release of the easy-to-use !SlideShow application for video titling and now the launch of the GreyHawk, a digitiser designed for the needs of the DTP user for £99.

The GreyHawk is an 8-bit digitiser offering 256 true grey scales which comes with Computer Concept's ScanLight Plus software for image processing. The more shades of grey the smoother and more realistic the image. The system works in real-time – increasing accuracy – and the program !Takeone gives a real-time desktop display for viewing the live video image in a window.

The digitiser comes as a single-width expansion card which makes it suitable for all Acorn machines, while the video comes from any PAL composite source which has a BNC connector on the back panel.

The still image is captured through the ScanLight Plus dialogue box and displayed almost instantly. You can edit the image while having the original also on screen and an extensive toolbox offers a variety of preset processing routines with the results saved as sprite or drawfiles.

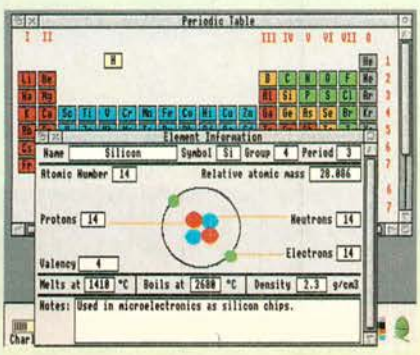
GreyHawk is compatible with Computer Concept's ColourCard where live images can be seen in 256 shades of grey. If you don't have a ColourCard you'll be restricted to 16 grey scales though ScanLight Plus and Impression's built-in dithering routines will emulate the 256 greys on screen. It is mode-independent and will work whatever screen mode you choose.

Games explosion in black

IF YOU feel the need to let off steam, take a look at Matt Black's (0733 315439) new range of budget software titles costing £9.99 each. The first two to be released are Blood Sport and Aggressor.

Blood Sport is a new action-packed martial arts tournament for one or two players. Each of your opponents has his own style and a special power and it is up to you to find his Achilles' heel.

Aggressor was first released by Atomic Software and has been revamped with eight new levels and better graphics and now comes with joystick support. Can you guide up to two men of the 101st Aggressor Unit through eight daring missions in this futuristic war scenario?



Periodic revision

NEW software house, PTW Software, have released a budget-priced GCSE revision aid called Chemistry. This is priced at £15 – though a demo is available in the public domain – including a site licence.

It is based around the Periodic table and provides an interactive source of information as well as notes and example questions. In additional there is a BBC font called ChemFont which provides the subscripted numbers required for chemical formulae and a directory of drawfiles of diagrams and and so.

For more information contact PTW Software, 72 Frosthole Crescent, Fareham, Hampshire PO15 6BG.

Disk perspective

DUE to space restrictions on last month's MegaDisk the Perspectives demo from TechSoft did not appear. We did, however, manage to squeeze it on to the 32-bit subscription disk.

If you are not a subscriber but would like to see this program in operation send a disk and a stamped addressed envelope to *Acorn Computing* and we will copy the program on to the disk for you.

Read the manual

AFTER a wait of 18 months Acorn have now released the Programmers' Reference Manual containing all the information you need to exploit Risc OS 3.

It is still in four volumes but is double the size of the original Reference Manual and comes with an additional index volume. It has also been decided to include the Risc OS Style Guide from autumn.

If you buy a PRM now a copy of the Style Guide will be sent to you as soon as it is finished.

Acorn's product manager, Neil Gardner, commented: "As an added bonus, we have included many programming examples in the text and there are also detailed sections describing ways to exploit the various aspects of programming for Risc OS".

The cost is £99 but if you have the Risc OS 2 PRM you can upgrade for £59 plus £4 postage and packing.

Just send your cheque – made payable to Acorn Direct – and the index front cover of your old manual as proof or purchase to Vector Services, 13 Dennington Road, Wellingborough, Northants NN8 2RL.

24-pin printing

THE dot matrix printer is alive and kicking and Star Micronics (0494 471111) have replaced their successful LC24-20 with the LC24-20 II.

This 24-pin dot matrix is an 80 column printer with an increased buffer size and so 25 per cent reduction in data transfer times.

Drivers are available for Windows, Amiga and Acorn 32-bit machines and the printer comes with paper parking, auto loading, push tractor feed and a quiet mode with an RS232 serial interface and auto sheet feeder available as options. The cost is £299.

NEXUS JUNIOR

Cost Effective Resource Sharing for the Primary School

Four Computers: One Hard Disc

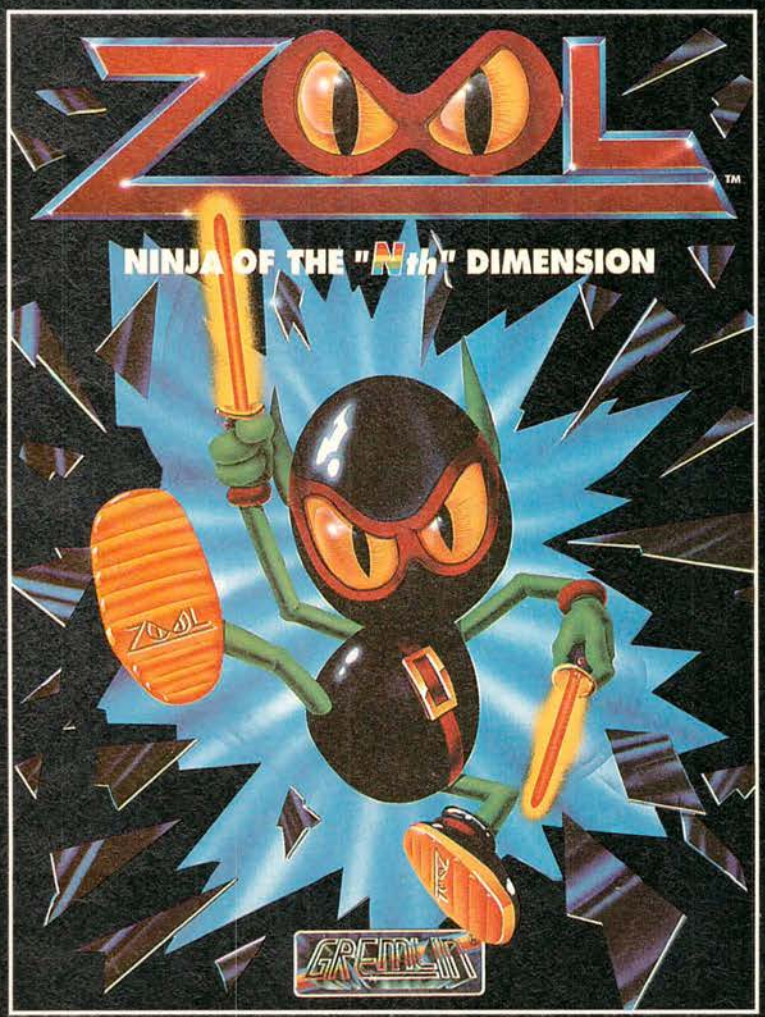
For less than £600 Nexus Junior enables four of your computers to share a hard disc in just one of them. Nexus Junior is the ideal choice with which to share resources and printing. Released from the restrictions of applications on floppy discs or the complexities of multiple hard disc management, Nexus Junior makes life easier.

Nexus Junior gives you the freedom to share valuable resources such as ink jet or colour printers. Database files can be shared. In fact, all types of files can easily be shared to encourage more collaborative approaches to I.T.

NEXUS JUNIOR GIVES YOU THE TIME TO TEACH

SJ RESEARCH

SJ Research Limited
J1 The Paddocks, 347 Cherry Hinton Road,
Cambridge CB1 4DH
Tel: 0223 416715 Fax: 0223 416440



NOW AVAILABLE ON ARCHIMEDES

"Zool is a massive arcade adventure with stunning gameplay."
DAILY MIRROR

"A great game and a zippy personality."
SUNDAY OBSERVER

"Zool is very impressive. It's fast and colourful with lots of twists, turns and things hidden from the player."
DAILY STAR

"If you're a platform fan, you're not going to be disappointed, Zool is fast, action packed, challenging and highly addictive."
THE SUN

"Zool is, quite simply, a stunning game."
BBC RADIO 1

"Spectacular, fast and smooth animation."
THE TIMES

RETAIL PRICE £25.99

GREMLIN

GREMLIN GRAPHICS SOFTWARE LTD., CARVER HOUSE,
2-4 CARVER STREET, SHEFFIELD S1 4FS.

Impact-Pro

The Professional Database

NEW!

- ✔ Fully relational databases
- ✔ Improved Impression★ reports
- ✔ Live calculations on cards
- ✔ Improved import/export flexibility
- ✔ Even easier to use!
- ✔ Fully compatible with Impact!

More choice!

The original **Impact**! database will continue to be available, and has now been reduced to just **£39.95** +VAT This is now your *first choice* in databases. Easy to use, sensible features, and now fully upgradable!

At last, a professional, fully relational database, in the same easy to use format which has made **Impact**! so successful. This new addition to our range provides *live calculations* on record cards and reports using a range of powerful functions across databases, providing true relational facilities. And of course, data merging into Impression documents has been greatly extended to include calculations and even tables.

New prices - exc VAT.	
Impact-Pro	£65.00
Impact!	£39.95
Upgrade	£25.00

Send today for full details of both products, or return your !Impact disc and cheque for an upgrade to Impact-Pro. Telephoned credit card orders welcome. Site licences available.

★ © Computer Concepts

Circle Software
33, Restrop View
Purton, Swindon
SN5 9DG
Tel: 0793 770021

C.S.

AND THEN THERE WERE THREE

EasiWriter

We knew we'd started something with EasiWriter. Many rave reviews later, it's still going from strength to strength for Acorn users.

But as the people behind MacAuthor & Formulator, we didn't realise we'd started a family.

TechWriter

TechWriter was our second brain-child. At last, mathematicians up and down the land are no longer at sixes and sevens with their equations.

And now, there's StartWrite. Our latest baby for the youngsters in every family.

StartWrite

So there you have it. EasiWriter, TechWriter and StartWrite.

Three classic products. All with impeccable parentage.

For full details of the Icon Technology family of word processors, simply contact Mike Glover on (0533) 546225.

ICON TECHNOLOGY LTD
5 Jarrom Street
Leicester
LE2 7DH
0533 546225

Dot to dot enjoyment

SUBSCRIBER SPECIAL
4 great programs on your disk this month

Dominoes: Whose round is it anyway?

HERE'S a great way to while away a quiet hour – it's the Fives & Threes version of dominoes executed very nicely on your BBC Micro – it works on the 32-bit machines as well.

The rules are very simple: Each player lays one of six dominoes alternately at either end of the line – you have to match the dots on the dominoes, for example, you can only lay a four-dot against a four-dot already on the table and so on.

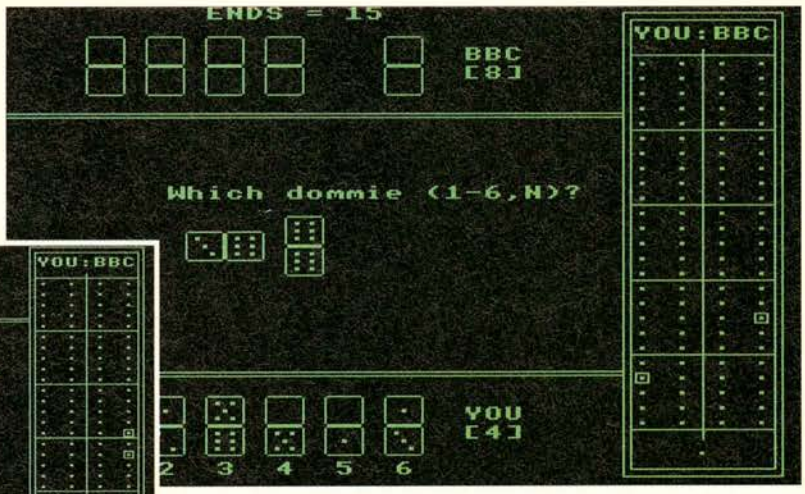
If you can't go play passes to the other person until neither can go or one has used up all his dominoes.

Scoring is simple too: Once you've laid the domino, add up the dots at each end of the line. If the sum is a multiple of 3 or 5, you score depending on which multiple it is.

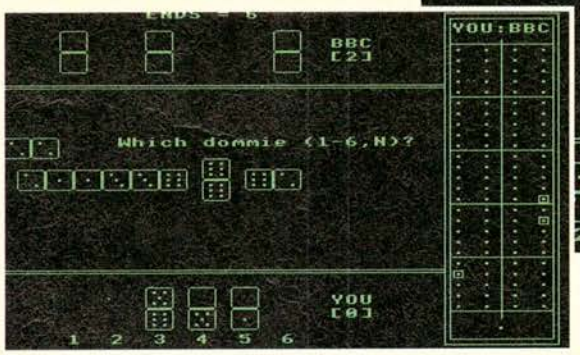
So 1, 2, 4, 7, 8, 10 and so on, score nothing while 3 scores 1 (1 x 3 = 3), 5 scores 1 (1 x 5 = 5), 6 scores 2 (2 x 3 = 6). If you get 15 it's the big 8 (5 x 3 = 15 *and* 3 x 5 = 15).

You play out many hands of six dominoes each with your score being shown on the cribbage pin board on the right. The first one to the end wins but you have to score exactly the right number to land in the last hole.

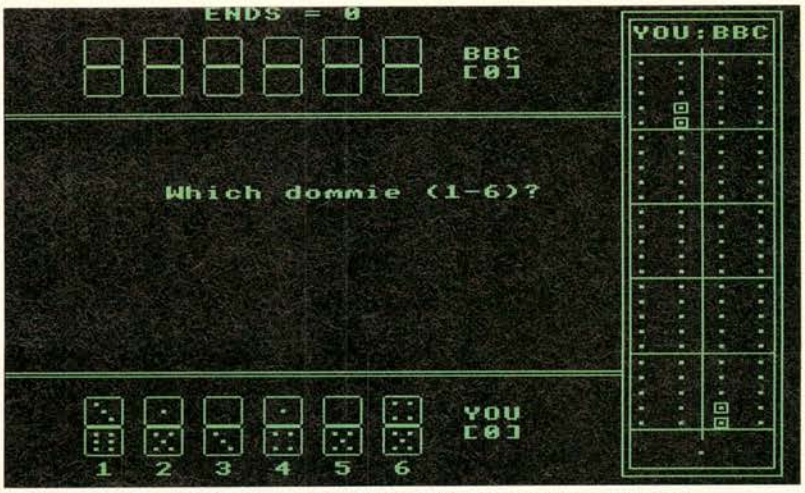
Mike Goldberg



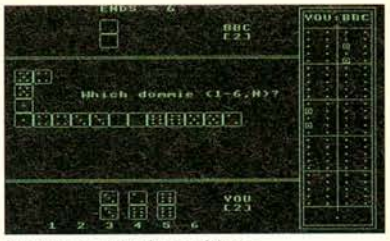
● *Bad start for me. I scored four for the double six but he had the six-three which gave him 15 so scored eight*



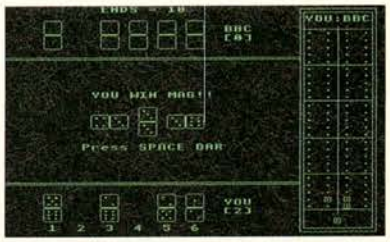
● *I haven't scored any more and now I have to knock because I can't go*



● *The computer needs to get a score of exactly one and I'm closing fast*



● *Two games later things are looking bad*



● *Ha! I win after a very poor start*

Acorn COMPUTING

Don't miss out on the great programs for the Acorn 8-bit machines that you can receive every month. From listings written specially for *Acorn Computing* readers to an excellent selection of PD programs.

Subscribe now, turn to Page 17

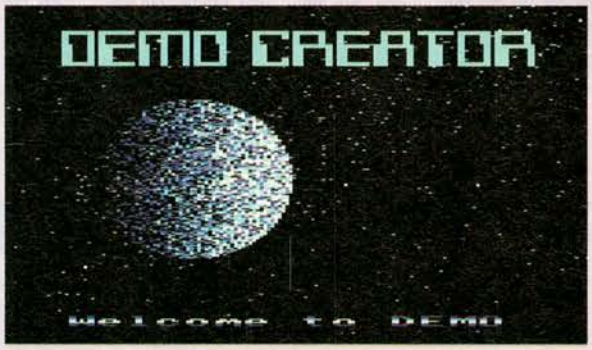
Demo creator: Smooth scrolling script

MOST good games include a scrolling message which moves silently and smoothly across the bottom of the screen. Every message works the same way with data scrolled eight pixels to the left and a new character printed in the space. Some messages even scroll new characters on to the screen column by column.

To help you create your own scrolling screens, we have three programs for you: A demo creator, a utility to determine the location and length of the scrolling window and a program to create a demo picture – a planet, a character set and a message which can be used with the main program.

A text file is included on the disk with complete instructions and when run, the demo will continue until the spacebar is pressed. If the machine code program comes to the end of the message, it will be repeated.

The demos will only run in Mode 5 which means that the picture used must be in that mode. As the demo includes all the graphics in one file, the picture is loaded on to the screen which doesn't look very neat, so you can change the palette to black during the loading process:




```
550 REM The first part of your
560 REM BASIC program
570 :
580 MODE5:VDU23,1,0;0;0;0;
590 FOR C%=0 TO 3:VDU19C%0;0;:NEXT
600 *RUN DEMO
610 :
620 REM Your program continues...
```

The location of the scrolling window refers to the area in memory where the machine code program will start to scroll the screen. Professional programmers shouldn't find it difficult to work out these numbers, but for the novice it might be a problem – this is the purpose of the second program.

To enable you to use data on different disks or tapes, the creator will print the next file to be loaded at the top left corner of the screen. Make sure that the correct disk is in the drive and press any key to continue.

Peter E. Ottermann

Password protection: Encrypt it or lose it

HOW many times have you written a routine that cries out for password input? This program will generate a machine code file which asks for the password, without displaying it on screen.

When the routine is required, type *RUN Pword to load it and prepare the operating system for password entry. From then on the command *LINE will stop the computer until the correct password is entered. If a mistake is made, pressing Return will allow you to try again.

The password is enciphered by adding one to the Ascii value. The program is in machine code so you can run it from the Basic prompt or from within a program.

In addition it could prevent someone else using the machine while you're away.

Andrew Flegg

Different strokes: Additional subtraction

JUST how good is your mental arithmetic? Differences is a simple game of arithmetic acrobatics with no time limit, though you could impose one, and the knack is to keep going as long as possible.

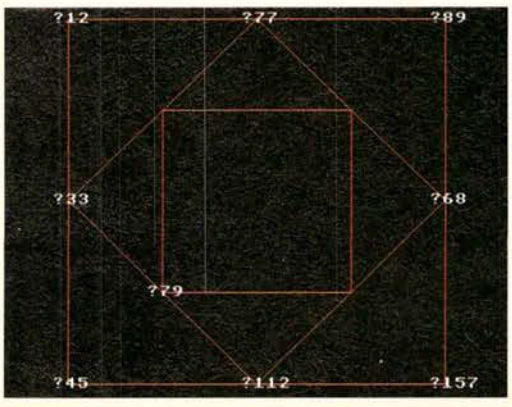
You start by entering four numbers – one on each corner of the rectangle. Then you work out the difference between each number as prompted.

Lines are then drawn between your answers and you have to find the differences between these numbers.

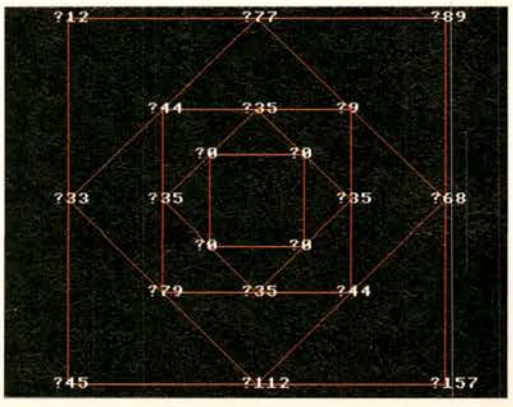
As long as each difference is correct you can go on to the following one, otherwise your score appears and an invitation to press the spacebar for another try.

Apart from working out the right differences as you go along, it all depends on your choice of the four original numbers – if you really want a challenge get someone else to choose them and put a time limit on it.

Jon Millington



● *The mental arithmetic can be mind-bending at first ...*



● *...but it gets easier towards the end*

FAULTY DISK?

If your subscription disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

Datapulse Disk
Unit 5
Station Road
Hungerford
Berkshire RG17 0L7

If there seems to be a fault with one of the programs please contact us at the magazine by post describing your machine set-up and exactly what happens when you run the problem program.

LOW COST £299 RRP £417

COLOURJET *Series 2*

300dpi Laser quality colour/mono inkjet printer

- Laser Quality 300dpi Colour/Mono Printing
- Virtually Silent Operation
- Small Footprint
- HP Desk Jet 500C Printer Compatible
- FREE Driver for Windows 3.1 or RISC OS 3.1 or RISC OS 2
- Optional 70 Page Automatic A4 Sheet Feeder - £40
- Prints on Plain or Coated Paper
- Compatible with IBM pc's, Archimedes, RM Nimbus, Commodore Amiga

LOW COST £159 RRP £299

BETAJET *(Mono) Inkjet*

300dpi Laser quality mono inkjet

- Gives Excellent 300dpi Laser Quality Printing
- Virtually Silent Operation
- Small Footprint
- Optional 70 Page Automatic A4 Sheet Feeder - £40
- Prints on Plain Paper
- Compatible with IBM pc's, Archimedes, RM Nimbus, Commodore Amiga
- Emulates HP Desk Jet +, Epson FX850 and IBM ProPrinters (optional extra)

integrex

PRINTING TECHNOLOGY IN ITS TRUE COLOURS

INTEGREX SYSTEMS LTD, Church Gresley, Swadlincote, Derbyshire DE11 9PT. Tel: (0283) 550880 Fax: (0283) 550325

APPOINTED DEALERS FOR HEWLETT PACKARD · OKI · PANASONIC · SHARP. ALL PRICES EXCLUDING CARRIAGE (£7.00 NEXT DAY) AND VAT.

It's the age of aq

AFTER a long day staring at a monitor I find a good way to relax is watching my collection of fish gliding effortlessly round their tank. Indeed, my fishtank is about the same shape as my monitor and, often as not, has far more interesting things going on inside it.

It was with this therapeutic notion in mind that I decided to recreate a microcosmic computer fishworld for those of you who do not own real fish but would like to watch the electronic equivalent.

There are benefits: For one, you do not have to clean out the tank, buy fishfood or even purchase tacky fishtank furniture. If you wish to include a piranha you can just draw one and plonk him in – not recommended in real life.

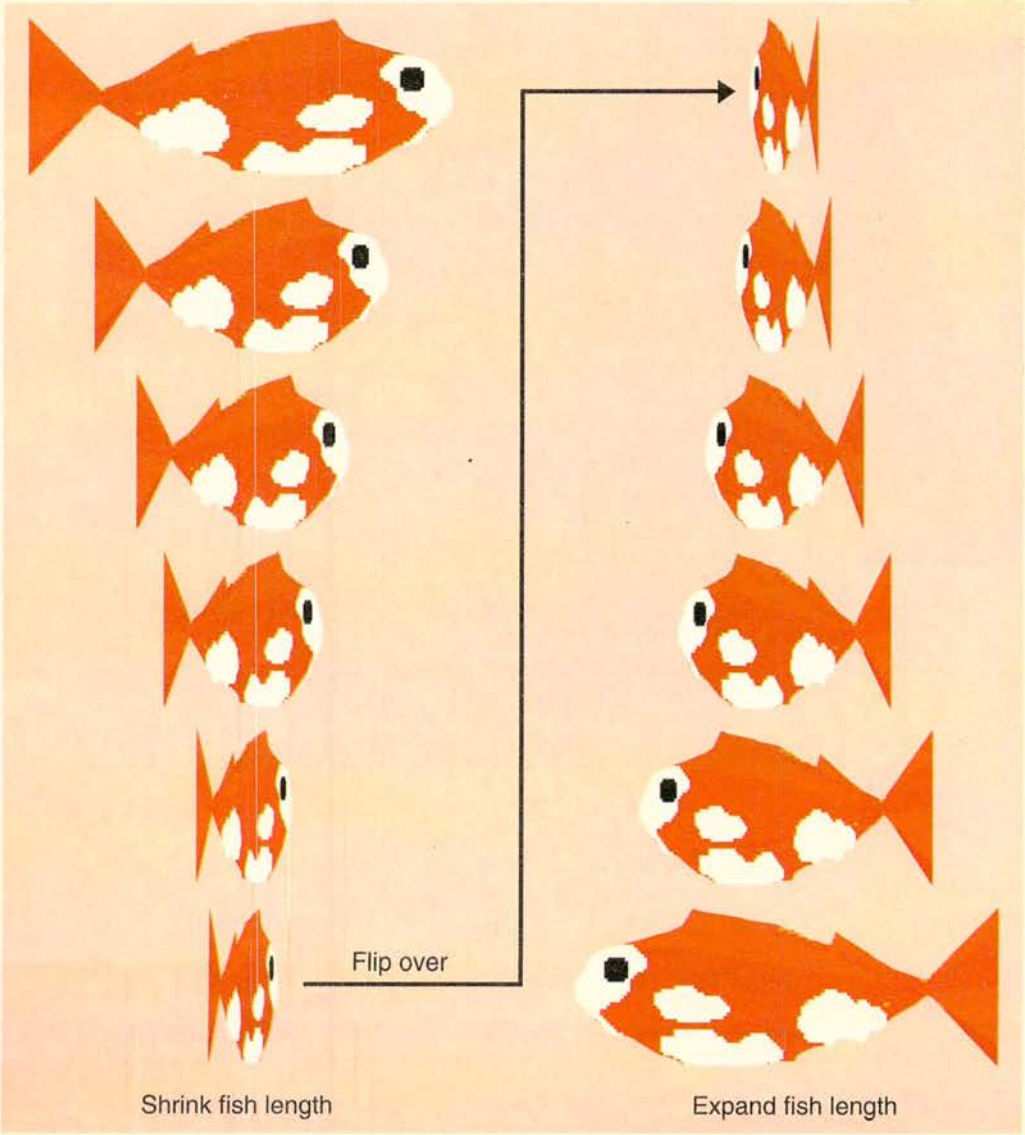
All the fish swim around independently and randomly but occasionally show meagre signs of intelligence when confronted by the edges of the tank by turning round and swimming the other way.

Indeed, the way that the fish turn provides the most realistic feature of the simulation and is so simple my real fish thought of it first.

Instead of flipping the fish-sprite about its vertical axis I took a look at the motion of a nearby koi carp busily torpedoing its way across the tank. From the side view the fish appears to shorten dramatically from head to tail then elongate itself to full length only now pointing in the opposite direction.

This manoeuvre can be copied quite faithfully by scaling the length of the fish smaller and smaller until it nearly disappears. Then flip the sprite over on its vertical axis. Now reverse the shrinking to expanding the scale to the full length of the fish, *et voila* you have Figure I.

● *Figure I: How to flip a fish with only one sprite*



Highly realistic

It is also important to notice that when scaling a sprite its X,Y coordinates remain unaltered. If no alteration is made of the fish's XY it would appear to rotate as if hinged at the tail and then at the nose – not typical fish-like behaviour. Therefore, an offset to the X coordinate is included in the turning procedure rendering the outcome highly realistic.

Using this method avoids designing intermediate sprites of the fish turning or the use of slow (in Basic) vector graphics. The design of the fish can be as detailed as you wish and, more importantly, you only have to design each of the fish once.

Using !Paint utilise the 256 colours of Mode 13 and create a sprite file called Fishfile. Design each of your fish 128 wide by 48 high and fill as much of the area as possible. Each fish must have a mask – have you ever tried fitting a mask on a fish – you must name the fish as follows:

The first part of the name must be *Fish* followed by a digit from 1 to 9 which is the fish number, then a

varium

Mike Goldberg gets in the swim with sprite scaling

second digit which is 0, 1 or 2 which have the following meaning:

0 Basic fish with mouth closed
1 Fish with fins moved a bit
2 Fish with mouth open

Design each fish facing to the right as this is the default direction in which they start to swim. Create the first one, named Fish10, and copy it as Fish11 and Fish12. Fish11 will be the same as Fish10 but with some movement of the tail and/or fins. Fish12 is exactly the same as Fish10 but with its mouth open.

I found the easiest way to draw the mouth open was by adding a triangle of masking pixels where a fish mouth should be. Similarly, I clipped a couple of triangular areas off the tail for the fish displaying movement. You do not need to create any fish facing left as the procedure takes care of it.

More hake, less speed

I made four fish for my fleet but you can have as many as you want remembering that the more there are the slower they move – a bit like cars on the M25. The only variable to alter in the program, therefore, is the one concerning the total number of fish designed:

```
290 num_fish% = 4
```

The actual line number may vary so search for *num_fish%* = to find the right line. Do not worry that the fish move slowly. The rather languid motion captures the reality of incarcerated marine life – indeed the micro-fish positively broil compared to their living counterparts.

Movement is confined to eight directions and the opening and closing of the mouth, the success of the latter dependent upon your skills as a fish filleter. Occasionally the fish will want to breathe and blow bubbles, so design a sprite called Bubble with a mask, any size up to 12 x 12.

That's the livestock, so what about a home for our happy haddocks? You can really go to town on this but first the framework.

Design a tank of size 320 x 256 in Mode 13, without a mask. Add a border all round the outside four pixels in width and make the water fill up to about a fish's depth from the top.

I added some gravel to the bottom of my tank along with some bigger stones and some oxygenating plants and put in a water filter for added realism. When you are happy with your design call it *Tank1* and copy it as *Tank2*.

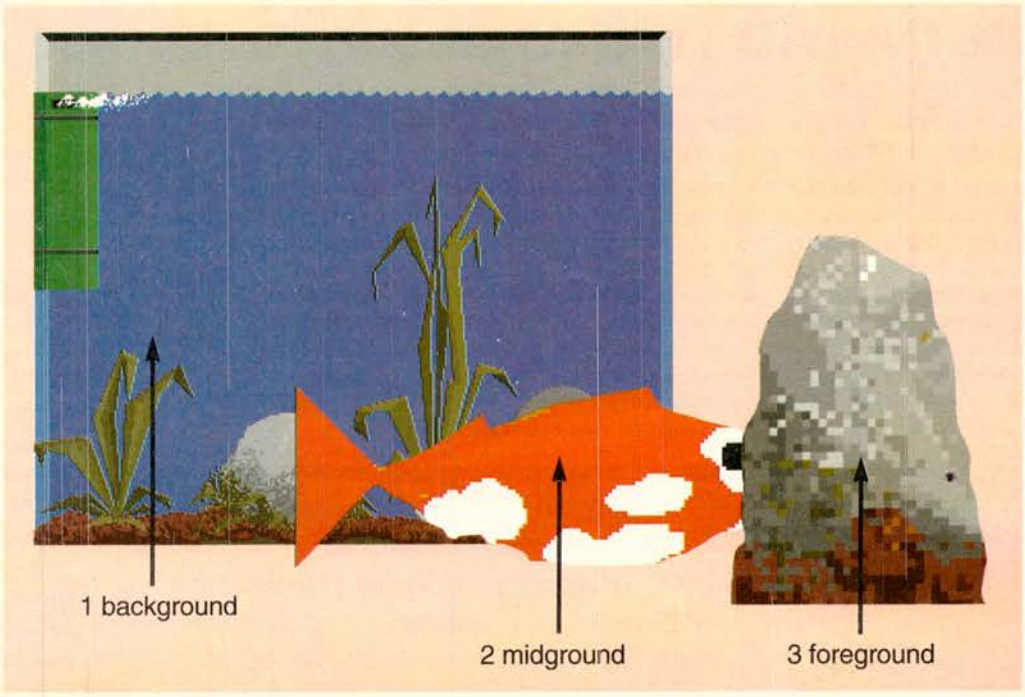
The program alternates between these two background sprites so I changed *Tank2* a bit to make the water look like it was being churned by the bubbling water filter. You may wish to move a plant frond around a bit or add bubbles, the choice is yours.

To further recreate an authentic and realistic environment for the fish I have added depth to the fishtank by *plaice*-ing objects on the screen in layers, see Figure II. The main loop first draws in the background, then the fish in the midground and finally a rock named *rock*, and a frond, called *frond*, in the foreground.

My rock is 32 x 48 with a mask but can be any size you wish – the same with the frond, mine is 32 x 96. Whatever sprites you design for the foreground make sure you enter their correct names in *DEFPROCsprites* and in the main program loop, in this instance lines 510 and 520.

It is best to keep the number of foreground objects small if they are large sprites as an awful lot of drawing to the screen is going on between each frame of the animation. Having said that, it really is very pleasing to watch the fish swim between and behind objects rather than always swimming in front of them.

So with hardly a fish pun in sight – I *hake* to say – this article is *halibut finished*. *Batter* go now.



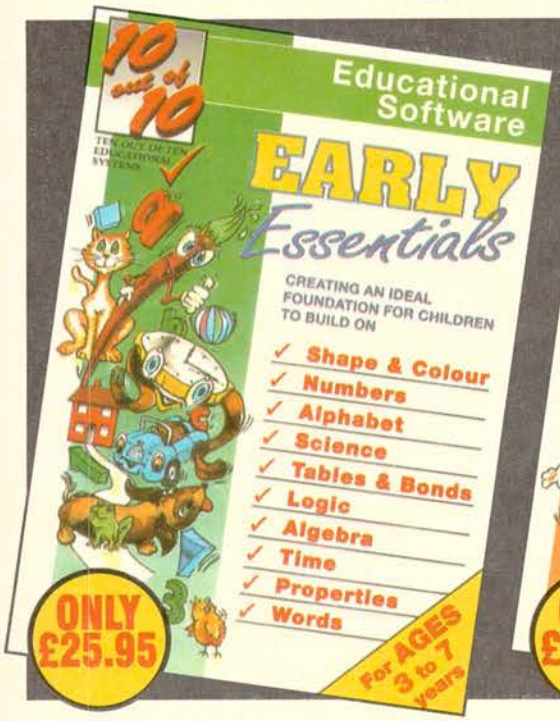
● *Figure II: By putting objects in the foreground the fish can go behind them*

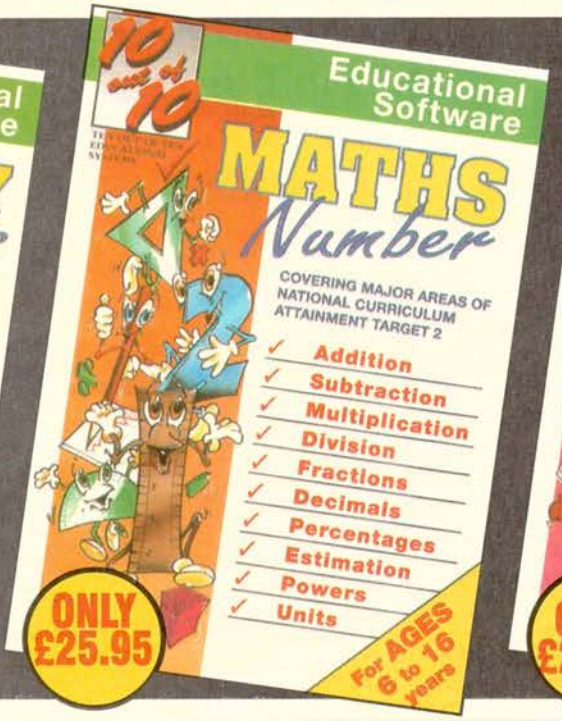
... 32-bit Acorn home computers ..... Commodore Amiga ..... IBM PC /compatibles ...

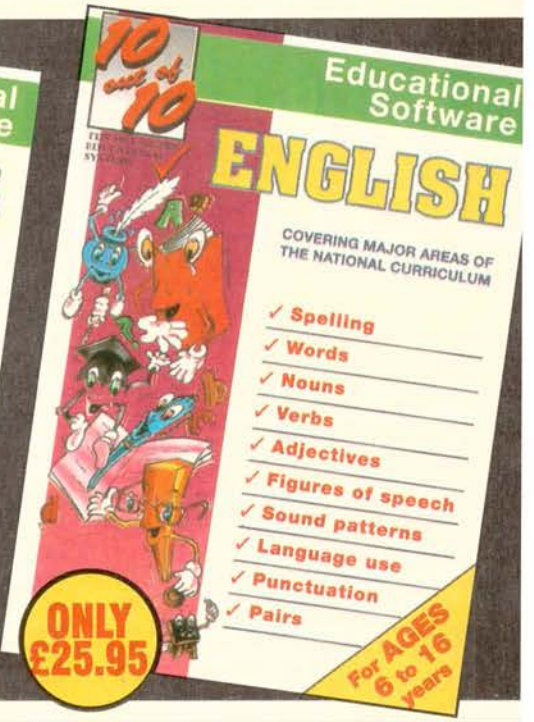
10 out of 10
TEN OUT OF TEN EDUCATIONAL SYSTEMS

14-Day FREE Trial

No Quibble Money-Back Guarantee







Early Essentials

For Children Under 7 Years

Subject Areas Covered

Gnasher

Gr1	Recognise simple shapes and colours	Shape/Col
Gr2	Learn the order of the numbers 1 to 10	Numbers
Gr3	Learn the alphabet – with pictorial clues	Alphabet
Gr4	Simple sequences including odd and even numbers	Logic
Gr5	Discover properties of common objects	Science
Gr6	Experiment with numbers and operations	Table/Bond

Link Up

Gr1	Match and link shapes and colours	Shape/Col
Gr2	Learn to count up to ten	Numbers
Gr3	Recognise the link between upper and lower case	Alphabet
Gr4	Link two shapes to composite pattern	Logic
Gr5	Match analogue to digital clocks	Time
Gr6	Know a selection of simple words	Words

Artist

Gr1	Colour and coordination skills	Shape/Col
Gr2	Counting with colours	Numbers
Gr3	Number stones with coloured rods	Table/Bond
Gr4	Following rules to recognise attributes	Properties
Gr5	Pattern and symmetry through shape and colour	Algebra
Gr6	Beginning a basic science vocabulary	Science

Grab It

Gr1	Check shape and colour knowledge	Shape/Col
Gr2	Reading simple alpha-numeric look-up tables	Alphabet
Gr3	Improving reading/vocabulary	Words
Gr4	Recognising characteristics (size + shape + colour)	Properties
Gr5	Reading and understanding two-way tables	Logic
Gr6	Identifying scientific ideograms	Science

Stones

Gr1	Understanding number conservation	Numbers
Gr2	Stepping through the alphabet	Alphabet
Gr3	Patterns of growing and shrinking shapes	Properties
Gr4	Learning to tell the time	Time
Gr5	Practising number skills	Table/Bond
Gr6	Using common sense to follow a sequence	Logic

Racer

Gr1	Understand the meaning of push and pull	Science
Gr2	Following letters in alphabetical order	Alphabet
Gr3	Associating words and pictures	Words
Gr4	Elementary algebra - "find a number" problems	Algebra
Gr5	Knowledge of everyday items	Properties
Gr6	Accurate and rapid time recognition	Time

Maths (Number)

For Children 6 to 16 Years

Levels of Attainment Target 2 Covered

Carnival

Gr1	2a.1	Know and use addition facts up to 10	Addition
Gr2	3c.2	Understand remainders in a calculation	Division
Gr3	4a.2	Multiplication facts up to 10 x 10	Mult.
Gr4	5b.2	Calculate percentages of quantities	Percents.
Gr5	6a.5	Relate equivalent fractions to decimals	Decimals
Gr6	8c.1	Use of estimation to check sure of answers	Estimate.

Cover Up

Gr1	3a.4	Know and use subtraction facts up to 20	Subtract.
Gr2	3b.1	Multiplication facts up to 5 x 5	Mult.
Gr3	4a.4	Mental addition of 2 two-digit numbers	Addition
Gr4	4a.10	Division of two-digit nos. by single digits	Division
Gr5	6a.4	Using equivalence of fractions (and ratios)	Fractions
Gr6	6a.10	Convert fractions to percentages	Percents.

The Big Bang

Gr1	2a.2	Know and use subtraction facts up to 10	Subtract.
Gr2	3a.3	Know and use addition facts up to 20	Addition
Gr3	5a.3	Multiplication of single-digit powers of 10	Mult.
Gr4	5a.4	Mental division of single-digit powers of 10	Division
Gr5	6a.8	Percentage changes	Percents.
Gr6	6a.9	Convert fractions to decimals	Decimals

Grab It!

Gr1	3e.1	Use decimal notation with money	Units
Gr2	3b.2	Know and use the 2, 5 and 10 times tables	Mult.
Gr3	4a.5	Mental subtraction of 2 two-digit numbers	Subtract.
Gr4	4a.6	Mental addition of several single-digit numbers	Addition
Gr5	6b.1	Estimate multiplication and division	Estimate.
Gr6	7a.2	Division of multiples of powers of 10	Division

Silicon Brain

Gr1	2b.2	Find the difference between numbers	Subtract.
Gr2	3e.3	Use a wider range of metric units	Units
Gr3	5b.1	Calculate fractions of quantities	Fractions
Gr4	4d.4	Multiplication and division problems	Division
Gr5	7b.3	Use memory and brackets on calculator	Mult.
Gr 6	8a.1	Standard form (integral powers of 10)	Powers

Cheers

Gr1	2b.1	Whole number add and subtract problems	Addition
Gr2	3d.2	Make estimates based on familiar units	Estimate.
Gr3	4a.1a	Solve multiplication and division problems	Mult.
Gr4	5d.1	Imperial units in daily use	Units
Gr5	5d.4	Use index notation	Powers
Gr6	8b.2	Four rules of fractions	Fractions

English

For Children 6 to 16 Years

Attainment Targets and Levels Covered

Sniper

Gr1	4.2b.1	Simple monosyllabic words	Spelling
Gr2	2.2a.1	Read & understand. Signs, Labels Notices	Words
Gr3	3.3a .1	Capital letters full stops and question marks	Punct.
Gr4	2.7d.1	Retrieve information (Abbreviations etc.)	Lang. use
Gr5	2.7e.5	Literary devices (Proverbs)	Speech.
Gr6	3.8c.1	Grammatical constructions (Passive Tense)	Verbs

Cover Up

Gr1	2.1b.1	Recognise simple words (adjectives)	Adjectives
Gr2	2.2e.2	Respond to poems (rhyming words)	Sounds.
Gr3	3.3e.6	Masculine to feminine nouns	Nouns
Gr4	4.3c.1	Awareness of word relationships (opposites)	Pairs
Gr5	4/5.5#	Spell words of greater complexity	Spelling
Gr6	2.8e.1	Lang. change over time	Lang. Use

Word Fit

Gr1	4.2c.1	Spelling patterns (blends)	Words
Gr2	4.3c.2	Awareness of word relationships (synonyms)	Pairs
Gr3	3.3a..1	Sentence structure	Verbs
Gr4	2.5e.3	Awareness of choice of words	Sounds.
Gr5	2.5e.3	Unconventional spellings	Nouns
Gr6	4/5.6b	Common misspellings	Spelling

Grab it

Gr1	2.2f.1	Read a range of simple material	Spe
Gr2	2.2c.2	Phonic cues in reading	Spe
Gr3	3.4d.3	Structures of English (Collective nouns)	Nou
Gr4	3.6b.2	Use of the the Apostrophe	Pun
Gr5	2.7c.3	Choose vocabulary	Lan
Gr6	3.7c.4	Lexical features	Wo

Librarian

Gr1	2.2c.1	Use initial letters to recognise words	Spe
Gr2	4.2c.2	Spell a wider range of words (plurals)	Nou
Gr3	2.3d.3	Appreciate links between words and sounds	Sou
Gr4	3.4e.2	Revise & redraft writing (descriptive words)	Adj
Gr5	2.7e.2	Use of literary devices - Similes	Spe
Gr6	3.7c.4	Choose a wider vocabulary	Pla

Cheers

Gr1	3.3e.6	Check for consistent use of comparatives	Adj
Gr2	3.3e.8	Simple use of past tense	Ver
Gr3	2.5e.1	Word play	Wo
Gr4	3.5e.1	Use and misuse of colloquialisms	Lan
Gr5	3.7b.2	More complex punctuation	Pun
Gr6	3.8c.9	Poetical constructions	Sou

The INNOVATIVE *10 out of 10* Series

These new suites of programs are a revolutionary step forward in educational software. They ALL use a unique system of automatically recording children's progress as they play and learn. This is just one of the many features which sets the 10 out of 10 Series in a class of its own.

Each package contains **SIX** expertly designed educational games **covering TEN essential areas** of a child's education. All packages cover a **wide age range** and subjects are available for all children from three to sixteen years of age.

As children learn from the games their progress is **automatically recorded in 36 specific challenges** – the National Curriculum Attainment Targets of these areas are optionally displayed on screen in subject-based packages. All the programs are designed to be **fun for single players or groups** and the assessment system can monitor the progress of up to 4000 children with **no input from parent or teache**r needed. Watch them, join in the fun or leave them and return later to check their progress. **You're in control!**

Available NOW – Phone 0742 780370 for a FREE TRIAL

✓ Maths (Number) ✓ English ✓ Early Essentials

COMING SOON in 1993 – Please phone for availability

✓ Maths (Algebra) ✓ French ✓ German ✓ Science

✓ Italian ✓ Spanish ✓ Junior Essentials

GUARANTEED TO EDUCATE

... or you don't have to pay!

Our FREE 14 DAY TRIAL is exactly what it clain to be! We don't bank any payment until you've ha chance to test the software for yourself.

YOU CAN TRY IT FREE – THERE IS NO CATCH

TELEPHONE 0742 780370 NOW!

HOW TO ORDER ...

Each package is ONLY £25.95 and you can order by CREDIT CA CHEQUE or EDUCATION AUTHORITY ORDER. We will send you software by First Class Post without processing the payment. If you do wish to keep the package simply return it to us within 14 days and we return your ORIGINAL cheque or order or not process your credit card payment. You need not even say why you are returning the package!

NO Questions, NO Quibbles, NO Hassl

Order by Post or Phone from:

10 out of 10 Educational Systems

1 Percy Street, Sheffield, S3 8AU

VISA ☎ 0742 780370 Access

Site and Network Licences are available – please ring for detai

FREE ... A chance for YOU to TEST THE BEST on your Acorn, Amiga or IBM/PC

PRODUCT SPOTLIGHT

Product: Picture It II
Price: £29.95 (£8.95 topic packs)
Supplier: Appian Way, Old Co-operative Buildings, Langley Park, Durham DH7 9XE.
Tel: 091-373 1389

Look at it this way

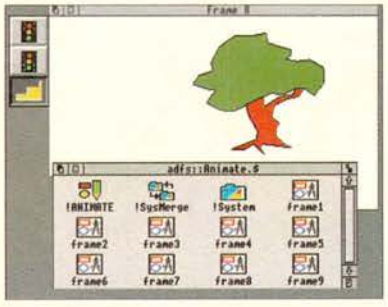
Capturing the image with Picture It can be easy. Rog Frost investigates

THE original Picture It was a superb piece of software. The product has been upgraded in a number of areas and I will concentrate on the changes in this review.

For those who don't know the program, Picture It offers users the chance to create Draw-type pictures from ready-made artwork. If you want to draw a house you'll be offered a range of pieces – walls, roofs, windows, doors and so on. You can select and position them on screen in a way which Appian Way describe as being rather like fuzzy felt.

However, this is a rather limited analogy since Picture It can re-size, scale and colour the pieces. A freehand option enables any shape to be created on the drawing screen, something that no fuzzy felt set could begin to offer. Files of suitable shapes can either be bought from Appian Way or created using Draw.

The arrival of a new version implies limitations with the original. Appian Way have clearly taken note of comments in bringing out this new product because it is better in many respects. I am glad to say that improvement has not involved increasing the level of complication. The on-screen menu structure can be geared very easily to almost any level of competence.



● *Flip-book animation is built-in with Animate It*

This means that some of the more advanced ideas such as pinning and grouping can be removed for first-time users. This results in a simpler screen layout which looks less daunting.

My main criticism of the old version was that it didn't print. Work could be saved as drawfiles and loaded up into Draw or a package such as Poster and then printed. That rather complex solution is now swept away.

Print is one of only three words on the main menu and any standard printer is supported. In fact there is very good support since full colour or outline-only styles can be selected.

Users of the old version may remember some frustration when trying to select objects for re-sizing or moving. Where objects overlapped it was a nightmare to get the right one. In this version it's possible to pin parts of a drawing to the screen.

This anchors them unless you later decide to unpin them. Sets of objects can also be grouped and then treated as one. Pinned and grouped objects can still be coloured in a free way – a very useful touch.

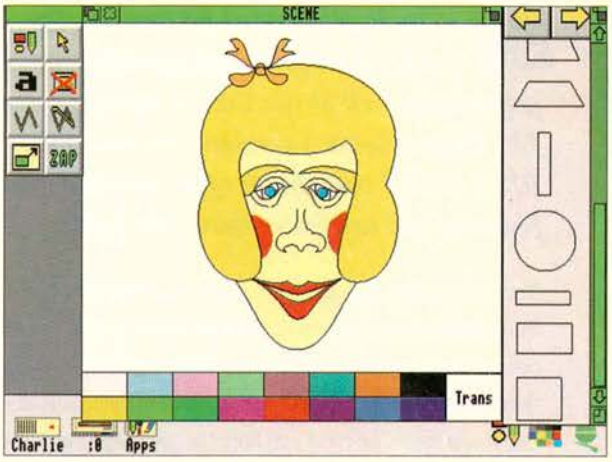
The new program comes with a lovely set of face-making shapes: Eyes, noses, ears and hair styles can be merged with faces of all shapes and sizes. Full faces can be made and coloured very rapidly so that the program becomes almost a clip art collection.

The original program had a rather cumbersome method for loading files of artwork. The new version loads up whole directories in one go which is a much simpler process.

The other half of the program is Animate It. This is a kind of flip-book animation system where drawfiles are displayed one after another to create the illusion of movement.

This program, too, is enhanced with the possibility of adjusting the speed of the animation.

It remains a first rate, if simple animation system which works well on a 1Mb computer and is easy for youngsters to understand.



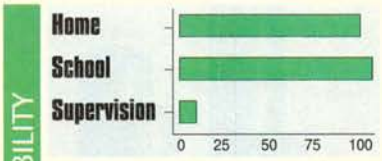
● *The new version comes with a set of face-making shapes*

Topic disks are also available for a wide variety of curriculum subjects, ranging from historical ships to the solar system and from religious icons and buildings of the world through to slugs and bugs.

Summing up

I considered version one a must for all primary schools. Version two is much improved and still provides an easy route into the complexities of vector-style graphics.

The many features can make Picture It an ideal program to run along side Draw at higher levels and for home entertainment as well.



NATIONAL CURRICULUM

Coverage dependant on files used - Art, Science, History, Geography, Religious Education, Technology.

Ages 5-11

The range of TurboDrivers has expanded to include versions for the Hewlett-Packard DeskJet and LaserJet range of printers, as well as the Canon bubblejet range. The latest release 3 versions are now fully RISC OS 3.1 compliant, offer new advanced features and are faster than ever before.

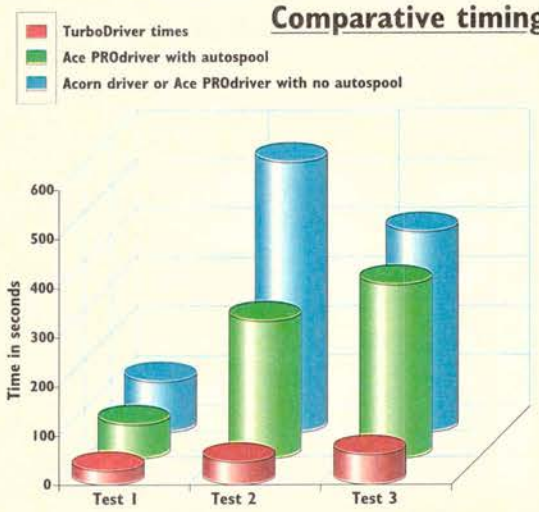
The bottom line is that if you value your time, the TurboDrivers are for you - they can render pages and give control back typically at between three and ten times faster than Acorn printer drivers or Ace PRODrivers. Indeed once the image has been rendered then the printing continues entirely in the background - as fast as the printer will go. This makes a large difference for just one page and an enormous difference if you are printing more than one copy of each page.

F E A T U R E S

- **Full 24-bit colour support for Canon BJC-800 and HP DeskJet colour printers.**
- **Three or four colour separations - even for mono printers.**
- **Extensive halftone screen control - different screen types, angles, screen density; features you would normally only find on expensive PostScript printers.**
- **Print from file entirely in the background.**
- **Fully RISC OS 3 compatible - works with !Printers and supports rotated text and sprite printing, multiple printers etc.**
- **By far the fastest printer drivers available for Acorn 32-bit computers - see chart.**

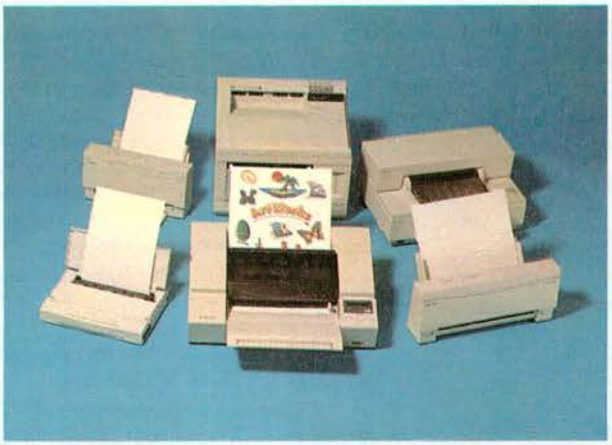
RISC OS 3 Turbo DRIVERS

Comparative timings



Test1 - A single DTP page of text and scanned graphic images
Test2 - Two copies of a three page text and graphic document
Test3 - A complex full page of graphics from ArtWorks.

The timings indicate the time in seconds to get control back. All tests performed on HP DeskJet 500 printer using a 4Mbyte A440 with an ARM3 fitted. Other machine combinations show similar performance gains.



Illustrated are a selection of printers supported by TurboDrivers. There is constant development in driver support so please contact Computer Concepts for details of latest printers.

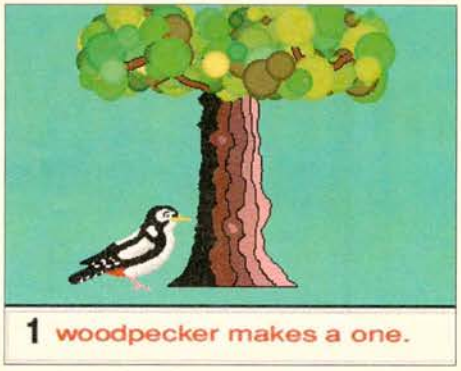
Canon TurboDrivers £49 + VAT (£57.57 incl.)
(supports all BJ-10, BJ-200, BJ-230, BJ-300 and BJC-800 printers)

HP TurboDrivers £49 + VAT (£57.57 incl.)
(Supports all monochrome and colour DeskJet and LaserJet printers)

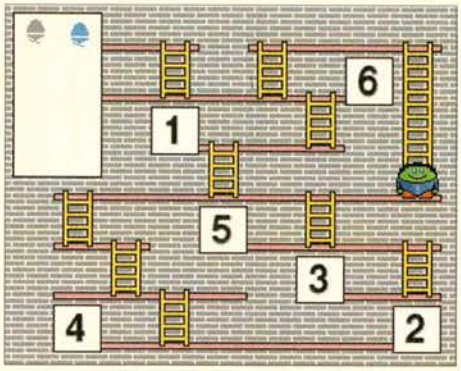
Please specify printer type when ordering. The BJ-230 and all HP TurboDrivers are only suitable for RISC OS 3.1 machines. 2 MBytes required.

Computer Concepts Ltd

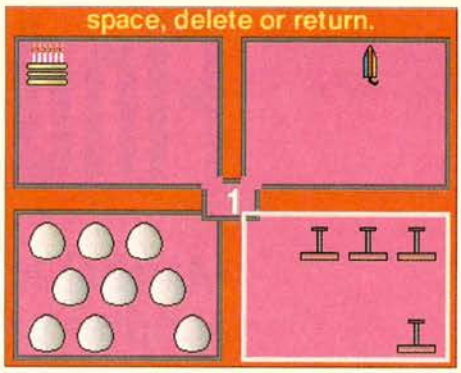
Gaddesden Place, Hemel Hempstead, Herts HP2 6EX Telephone 0442 63933 Fax 0442 231632



● *Animated Numbers comes with some nice reward screens*



● *Guide the little man to the correct number*



● *Make sure all the boxes hold the right number of objects*

Make the right connection

Rog Frost assesses two converts from the 8-bit market

PRODUCT SPOTLIGHT

Product: Animated Numbers
Price: £22.95
Product: Connections
Price: £28.95
Supplier: Sherston Software, Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH.
Tel: 0666 840433

THESE two packages originally appeared for the BBC Micro. Both have been re-programmed to take advantage of the increasing numbers of 32-bit machines which are finding their way into infant schools and homes.

Both pieces of have a mathematical content but while Animated Numbers is aimed at youngsters from three to five, Connections is geared to those between five and eleven years.

Animated Numbers requires children to recognise the shapes of printed numbers. These have to be matched with quantities of objects on screen.

Various approaches are used to ensure this can be fun. Bright, graphical rewards are given for success along with clear, digitised sounds with the adult having full control over volume and the sequence of the games.

The first part of the program involves steering a character around platforms and ladders to find the correct digit.

Steering is easy since the little character automatically stops at every junction. Reaching the correct number produces a colourful, noisy display and leads straight on to a full-screen, fun, graphical display appropriate to the number. For example, *Five Fireworks Flame into a Five*. The graphics won't start until the child hits the correct digit.

Part three divides the screen into four. Each section must be made to contain the required number of items. These are then animated – such as Jacks jumping from boxes or dogs barking.

A Concept keyboard can be connected and the package includes overlays for A4 and A3 sized versions. For those using the standard set of keys, the ones used are kept to a minimum.

Connections is almost a sequel coping well with early Key Stage 1 work on the National Curriculum and extends up to simple fractions and graph interpretations.

The screen display is rather like the final part of Animated Numbers. A range of problems is displayed around the screen and these can be altered so that the result from each is equal to the number in the middle of the screen. This opens a pipe to make the connection.

Some of the pipes, though, get blocked and are subjected to some amusing, gentle violence to clear the blockage. For example, a crane may drop a weight on the pipe or a person on a see-saw may bang their head on the blocked area.

These little animated extras are not really an integral part of the program but they do add to the enjoyment.

Connections is also Concept keyboard compatible and is supplied with full colour overlays. Teachers are presented with an easy-to-use menu which allows them to customise the program to the needs of individual children.

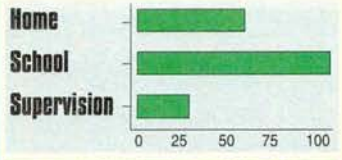
The software has been written with the National Curriculum in mind and Connections is a very good program covering a number of attainment targets.

Summing up

Both programs come with the Montclair font which makes all text very readable and have good print options as well. They are very similar to the older BBC Micro versions and schools who use the old versions won't need the new.

For schools or parents looking for well thought out, simple but effective education programs these two offerings from Sherston should be high on their list.

SUITABILITY



NATIONAL CURRICULUM

Mathematics Levels 1 and 2
Animated Numbers: Ages 3-5
Connections: Ages 5-11

Find the lady

Marshal Anderson sorts out another princess in distress

PRODUCT SPOTLIGHT

Product: Princess Rebecca
Price: £20
Supplier: Le Computer, P.O. Box 29, Chelmsford, Essex CM3 1QS.
Tel: 0245 362225

PRINCESS Rebecca sets out to be an introductory adventure game for young, or *developmentally young* children. On booting up you get an illustrated text adventure format in a window – you must rescue the princess.

Below the picture and text is a simple map that shows your position and the pictures reflect what's going on in any given location.

You move around the map using keyboard, mouse or Concept keyboard. To complete the task you visit the witch's castle, the wizard, the castle again, then home with the princess. The whole thing happens in just 15 locations and, as these things go, there doesn't seem much to it.

There is only one actual problem to solve and, as the game is in no way interactive – you can't make decisions except where to go – simply blundering around the map would solve it in no time at all.

● *Starting out in search of the Princess*

● *Do you really want to enter the witch's castle?*

● *A really dangerous denizen of the forest*

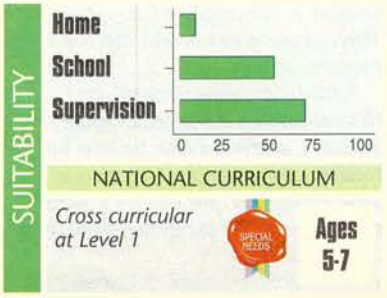
Having said that, there is an awful lot of stimuli here – 20 or so pictures and some nicely sampled sound. The text accompanying the location is a bit difficult for the target ability range but often these programs are used with an older child or adult present so that needn't be a problem.

The documentation provides printouts of the pictures and text in such a way that they could be used for many activities and there are plenty of suggestions for other work.

Summing up

This package is a straightforward springboard into other activities and you would use it the way you might use a picture book.

If your school makes a lot of use of adventure games it is a nice introduction to them but you would need to make sure the children had some awareness of what was actually happening in the story. The brevity of the package makes it of little use in the home.



PRODUCT SPOTLIGHT

Product: Time Traveller (Medieval Realms and Britain Since the 1930s)
Price: £37.50
Supplier: ESM, Duke Street, Wisbech, Cambridgeshire, PE13 2AE.
Tel: 0945 63441

MANY teachers know relatively little about some of the National Curriculum History study units which must now be taught in our schools. Help is at hand, though, as more and more software from a variety of publishers is released in support.

With Time Traveller exploration is via a database structured to encourage children to concentrate on the chronology of the subject. The emphasis is on when something happened in comparison with other significant events – cause and effect – rather than the date.

The first two in the series are Britain Since the 1930s (1930-1960) and Medieval Realms (1066-1500). For use at Key Stage 2 and 3 respectively, each title provides data to allow pupils to investigate change and development and to help them build and test hypotheses.

The data is presented as a timeline but you can opt for a shorter period: Events from only one subject, all events between certain dates or a combination from more than one subject.

As well as being able to research the standard timeline it is also possible to use Time Traveller to display two or more sets of events and then compare them. By doing this pupils can look for any relationships there may be between events.

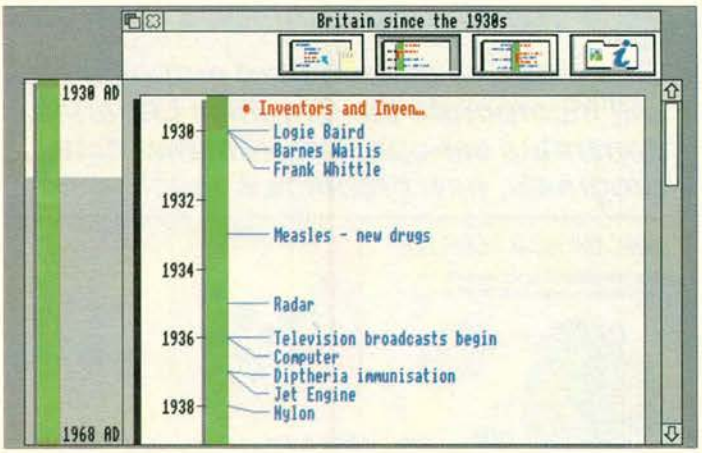
Each event has its own record card which is used to provide details of the date and what happened. These are easily called up and can be amended or added to.

Additional record cards can be created simply to expand the material in the database or to reflect particular lines of enquiry. New events or subjects are automatically added to the timelines when they are displayed.

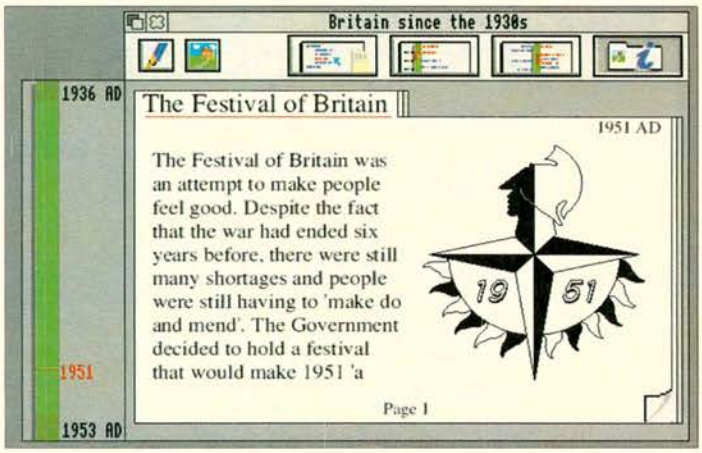
Each of the Time Travellers comes with its own ring bound guide which, unfortunately, are not as clear as they could be and loading the actual program is a little more long-winded than necessary.

Once running, the display consists of a relatively compact main window with four large *buttons* which are used to select themes and subjects, simple timelines, comparative timelines or record cards.

Understanding the differences



● *You can choose to explore a small number of events in time...*


Britain since the 1930s
1936 AD
1953 AD
1951
The Festival of Britain
1951 AD
The Festival of Britain was an attempt to make people feel good. Despite the fact that the war had ended six years before, there were still many shortages and people were still having to 'make do and mend'. The Government decided to hold a festival that would make 1951 'a
19
51
Page 1

● *...or you can opt to learn more about one particular event*

Stepping through time

Frank Jukes examines the historical value of a new series from ESM

between themes, subjects and events is vital when it comes to using Time Travellers. Themes are the main headings used by the databases.

Britain Since the 1930s uses Famous People, Inventors and Inventions, Society, The War and Transport. In a layer below these themes lie subjects. Under the theme of Inventors and Inventions, for example, are the subjects of Electronic, Engineering and Medical inventions.

Under these subjects is the final layer of the database containing events. Selecting Engineering means that timelines will show dates and events connected with engineering inventors and inventions.

Clicking in the timeline on an event of interest such as Frank Whittle and then on the record card button will display the relevant card.

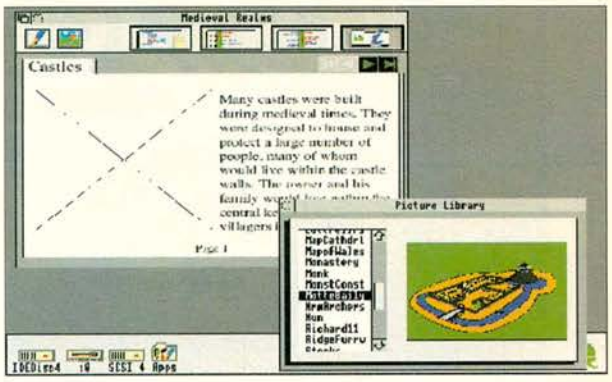
Here lies what is both a weakness and also a strength of Time Traveller. The record card for Frank Whittle's entry is woefully short on information – he was, after all, a man who effectively transformed travel for millions of people.

However, with a little research away from the computer the entry can be quickly and easily expanded. Additionally, if an illustration is required a drawfile or sprite may be dragged into a picture library.

With similar research it is possible to add completely new themes, subjects or events to produce a fully customised version of the database.

To extend the packages' potential there are ring binders of support materials. The one to complement Medieval Realms was very impressive with around 70 pages of teacher notes and photocopy masters as well as high-quality written and photographic source materials. As well as being able to alter existing Time Travellers it is also possible to go a stage further and create completely new ones.

Themes are created first of all followed by daughter subjects and granddaughter events under their respective parents. Finally, text is added to create the record cards.

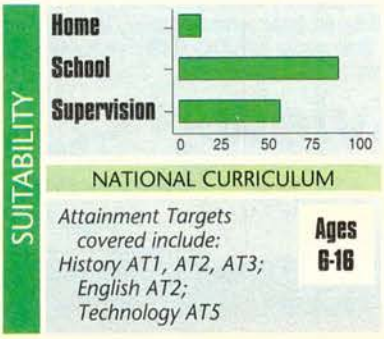

Medieval Realms
Castles
Many castles were built during medieval times. They were designed to house and protect a large number of people, many of whom would live within the castle walls. The owner and his family would live within the central keep
villagers
Page 1
Picture Library
MapCathdrl
MapsHalls
Monastery
Monk
MonstConst
Richard11
RidgeFarry

● *Graphics and text can be added to a database at will*

Summing up

Both Britain Since the 1930s and Medieval Realms provide a fairly comprehensive but understandably incomplete introduction to their periods in time. Quite obviously, databases like these could never hope to include everything but, used as a starting point for further investigation and development, they are effective.

In an alternative approach to learning they are usable at various levels – straightforward data retrieval, data manipulation and the creation of new databases. My only reservation is that it may take some pupils quite a time to come to an understanding of the structure. Nevertheless, recommended.



The Market Leaders in Educational Computer Software

RICKITT EDUCATIONAL MEDIA

Ilton • Ilminster • Somerset • TA19 9HS
Tel: 0460 57152 Fax: 0460 53176

The convenient single source for all

EDUCATIONAL SOFTWARE

- Software for Pre-school to GCSE, A'Level, Further Education and Special Needs.
- Programs for: All Acorn and most other computers.
- Over 1000 programs covering the National Curriculum plus a host of utility and revision programs from all the major publishers
- Orders from both home and schools users welcome.

For a free copy of our latest catalogue, phone our
Sales Line 0460 57152 or Fax 0460 53176

SSERCSOFT 93

Software for Serious Science & Technology

Coming soon -
THE SSERC GRAPHICS CD-ROM

This massive collection of graphics etc will incorporate the Graphics Libraries, apparatus set-ups, experimental data, programs, new graphics & much more.

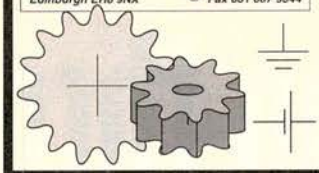
SSERC CHEMICAL MODELLER

Molecular modelling software for the Archimedes range - 2 Mb RAM required

only £52.50 +VAT

SSERC
24 Bernard Terrace
Edinburgh EH8 9NX

Tel. 031 668 4421
Fax 031 667 9344



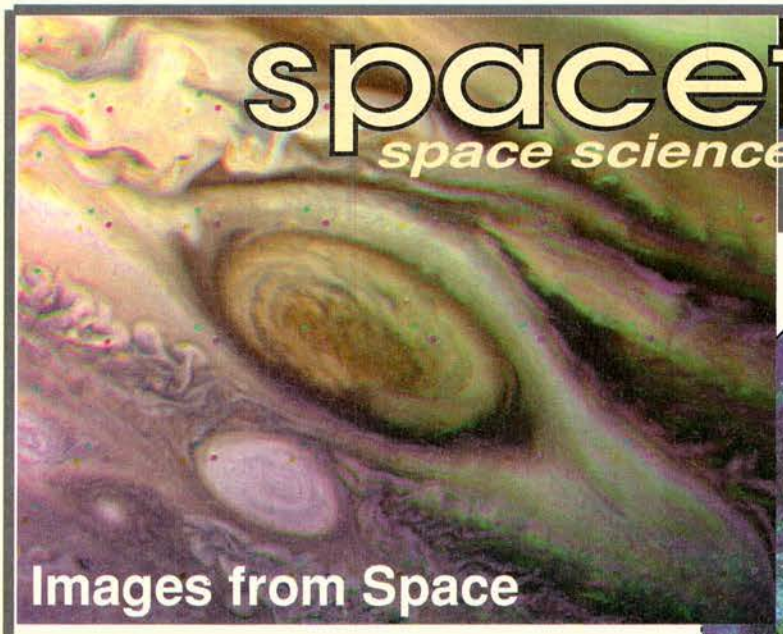
GRAPHICS LIBRARIES 15 discs, £10.50 + VAT each

Buy 5 or more & get free site licence

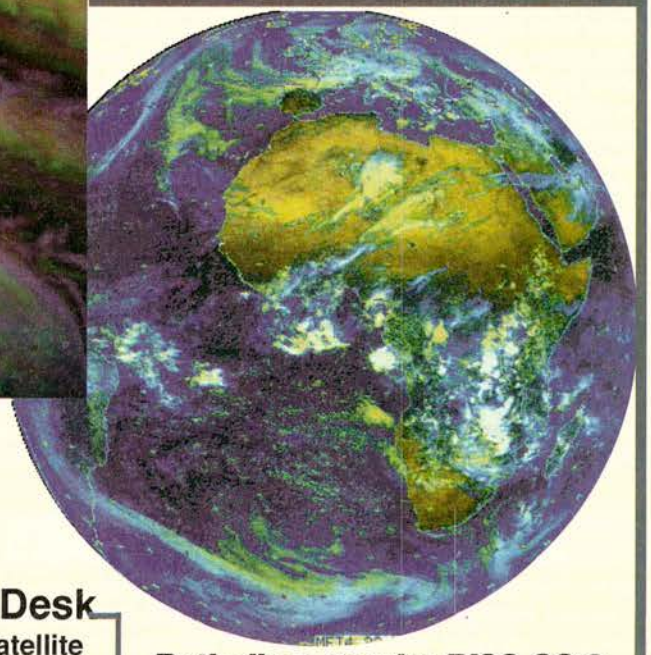
Please make all cheques payable to SSERC
SSERC, 24 Bernard Terrace, Edinburgh EH8 9NX
Tel. 031 668 4421 for more information
or send a SAE (£1 please) for a full information pack.

spacetech

space science resources



Images from Space



A pair of demo discs containing several stunning spacecraft images, and including a superb whole Earth, multispectral animation, is available from Spacetech for only £5.00 fully refundable against purchase of:

PDSview

General purpose image processor
Featuring the Planetary Data System

OR...

The Weather Desk

Multi-tasking Weather Satellite Image Gathering System

Both discs require RISC OS 3
Animation Demo needs 4MB RAM

spacetech 21 West Wools, Portland, Dorset DT5 2EA. U.K. Tel. 0305 822753 Fax. 0305 860483

The unsound barrier?

Mike Cook rounds off his look at the ozone layer, concentrating on how it is measured

Measurements of atmospheric ozone have been made over the last 30 years from ground-based stations and over the last 20 years from orbiting satellites. Studies of ozone concentration are of interest to atmospheric physicists and global meteorologists.

Therefore ozone measuring equipment has been put on weather and Earth monitoring satellites. As early as 1970 Nimbus 4 was collecting global ozone figures and scientists were checking these results against ground readings.

Ozone is detected by the back scatter radiation. An ozone molecule will absorb sunlight and then re-radiate it in all directions at specific wavelengths. This is how it shields us from the most harmful rays. The satellite detects these scattered wavelengths to determine how much ozone is present.

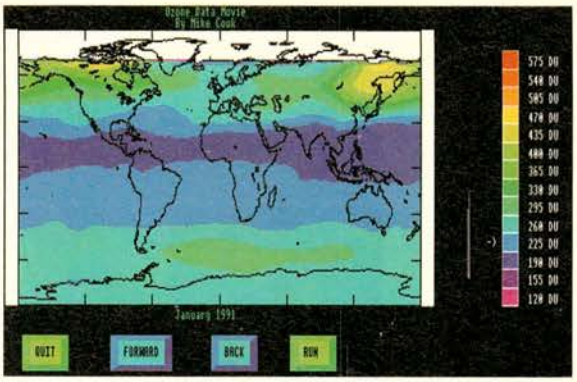
The amount of this radiation depends not only on how much ozone is present but also how much sunlight. Therefore the satellite actually measures two wavelengths: 312 nm and 331 nm. One is strongly scattered by the ozone and the other is weakly scattered. By looking at the ratio of the two measurements you can get a measure of ozone independent of the amount of sunlight.

The Nimbus 7 satellite is the one that is currently being used and the ozone instrument is called TOMS – Total Ozone Mapping System. TOMS measures ozone over a 50 km square field and collects 35 every eight seconds as the instrument scans from right to left.

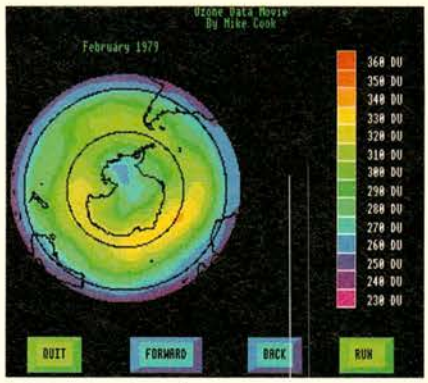
That makes a staggering 200,000 ozone measurements every day. The satellite is in what is known as a sun-synchronous polar orbit. This means that the point directly under the satellite is always noon or midnight local time.

Ozone in the stratosphere is a very tenuous gas, and it is measured in Dobson units. This gives the equivalent layer of pure ozone gas at normal temperature and pressure, that is at sea level.

The conversion rate is that 100 Dobson units is equivalent to a 1 mm thickness of pure gas. The maximum amount of ozone detected is 650 Dobson units with the average being closer to 300. That means in 10 miles of atmosphere we are talking about the equivalent of 3 mm of gas. That gives you some idea of how spread out this gas is.



● *The northern polar winter prevents readings for the Arctic*



● *The view from the bottom, a nasty big hole in the ozone*

The ozone hole

As we have seen, readings can only be taken during daylight therefore the sensors are only turned on for half the satellite's orbit. Nevertheless the entire world can be measured every 24 hours. However, there is a problem over the poles.

During the polar winters, the sun never shines and so no measurements can be made. Also, as no light reaches the stratosphere no ozone can be generated.

Therefore during the polar spring when sunlight first reaches that part of the atmosphere there is a flush of ozone production. It is this flush that scientists are concerned about – its size seems to be diminishing over the years, especially around the south pole. There is a much thinner layer than they expected at this point, not only that but that thin area appears to be getting larger.

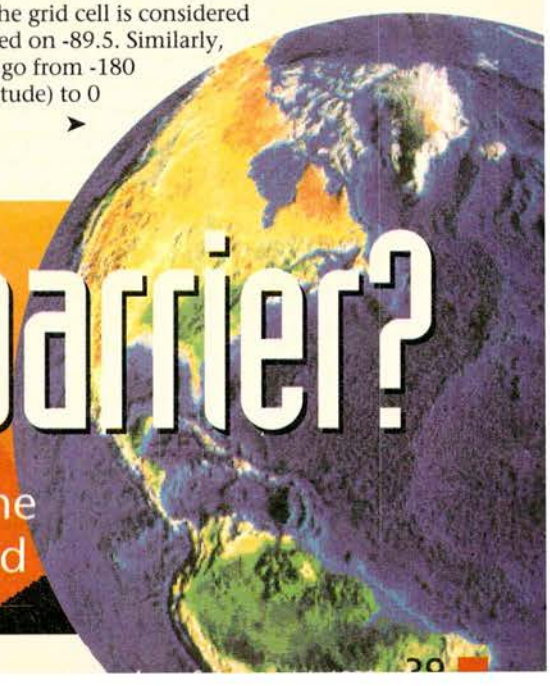
The latest results just released for 1992 show it is 15 per cent larger than the previous year, a record ozone hole. The total amount of ozone is dropping as well, by about 5 to 10 per cent over the next century.

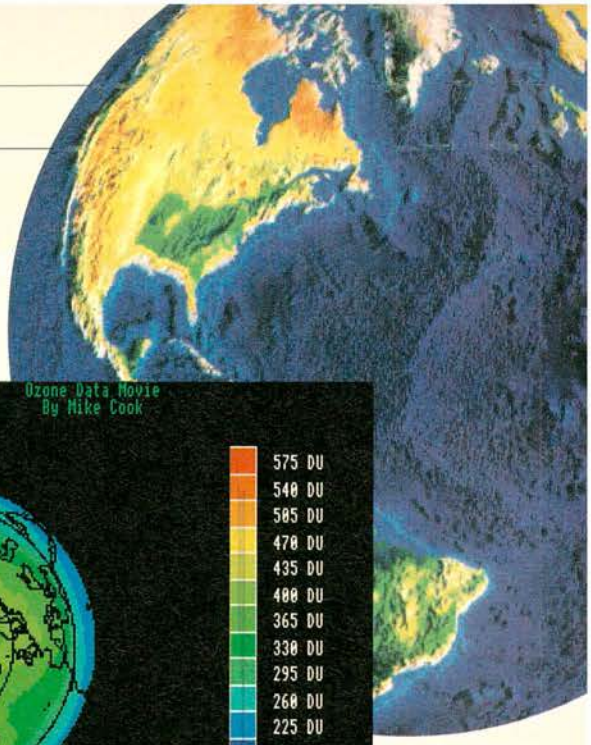
TOMS data

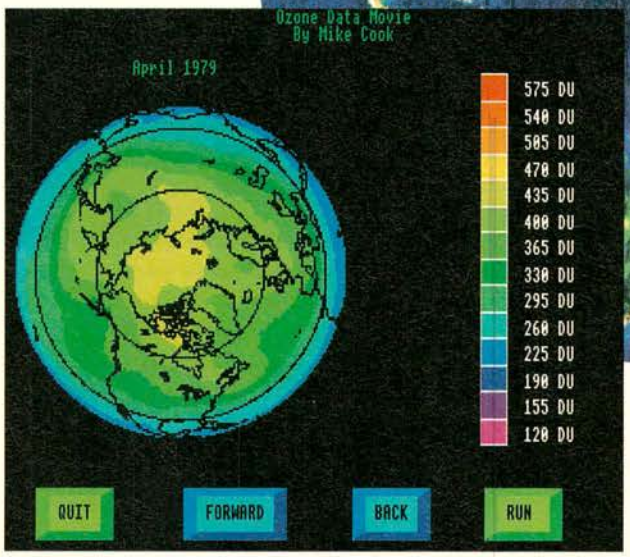
Three CD-Roms are available from NASA concerning ozone data:

● Volume 1 contains gridded ozone data every day from 1978 to 1991. The ozone data for each day is gridded into 1 degree latitude zones by 1.25 degree longitude zones. Latitudes go from -90 degrees (the south pole) to 0 degrees (the equator) to +90 degrees (the north pole) in 1 degree steps, so there are 180 latitude zones.

The first zone extends from -90 to -89, so the grid cell is considered to be centred on -89.5. Similarly, longitudes go from -180 (west longitude) to 0 ➤







● *From the top things don't look so bad, but that's 14 years ago*

> "In 10 miles of atmosphere we're talking about 3mm of gas"

➤

(Greenwich, England) to +180 (east longitude) in 1.25 degree steps, so there are 288 longitude zones (360/1.25).

The first longitude zone extends from -180 to -178.75, so the grid cell is considered to be centred on -179.375. The data files are in Ascii format and have some pre-computed statistics.

● Volume 2 contains global ozone maps for every day from the first of November 1978 to the end of March 1991. There are also monthly averaged record maps. A single file consists of a 340-byte header followed by a 340 by 359-byte image file, similar to a sprite file.

The byte values range from 16 which corresponds to 100 Dobson units to 191 which is 650 Dobson units. There are no values outside this range apart from zero, which corresponds to background pixels or missing data.

Each file contains three world projections: North polar view, south polar view and Mercator protection – the normal world map form. There is a file containing grid lines and continent outlines designed to be overlaid on these images so that you can orient yourself.

The daily images do suffer from drop out, small areas that were not covered that day due to satellite operation difficulties or orbit pattern. Also during 1979 the instrument was turned off for five days from June 14 to June 18. Even so there are data files for these days so that automatic analysis programs will not be faced with missing files.

● Volume 3 is a supplementary disk containing both images and gridded data for the period January 1, 1989, through to January 31, 1992. In addition there is some overpass data for the whole period covered by the TOMS. Here the data from the satellite is presented in terms of ozone concentration over a specific sight.

There are 333 geographic locations in the site list, each with a unique identification number. Science sites are numbered 400 and above, and cities are numbered 900 and above. A complete alphabetic list of these is given on the disk and also data files concerning the solar output variations over the same period.

Software is provided on each disk – this is in PC format but could be run under an emulator. However, the image software is very slow. I have not tried it on the emulator but on a 286 system it took 20 minutes to display one picture. This is because after loading each image it goes through a pixel by pixel converting it to the appropriate display colour.

On a 386 system this was an acceptable 30 seconds. I have written a Wimp application to read these images direct from the CD-Rom and save them as sprite files.

It gives you the option of extracting a 16 colour sprite as shown on the disk or a full detail 256 colour sprite.

You can then use these sprites to replace the ones in the movie application to make your own movies. This is available from Musbury Consultants.

The movie on the cover disk shows the ozone variations for a single month over 11 years for the northern hemisphere, culminating in the very obvious hole last year. The image data has been colour coded according to bands. This reduces the amount of detail visible but lets you see the large scale trends easily.

Running the mouse pointer over a single frame shows an arrow pointing at the appropriate band. This is necessary as you can't always distinguish what colour you are looking at due the contrast of adjacent colours.

There are other ozone movies available showing south pole and whole world views for selected months. Also there is a daily movie showing the ozone swirling around the pole. These are available as a two disk set, see the information panel.

Looking at the ozone variation over the years it is difficult at first to see trends. This is because there are so many natural cycles of variations taking place. There is the daily variations as the ozone gets swirled around by stratospheric winds.

Then the yearly cycle as ozone is created and destroyed according to the amount of sunlight reaching the stratosphere and finally there is the variation on solar output over an 11-year sun spot cycle. On top of that we have to look for a 0.2 per cent a year steady depletion. It's difficult to see but it is there.

● *So where will you go for your summer holidays?*

PRODUCT SPOTLIGHT

Product: CD Roms
Volume 1 Nimbus 7 TOMS Gridded Data
Volume 2 Nimbus 7 TOMS Image data
Volume 3 Nimbus 7 TOMS Update
Price: $20 per disk plus $10 overseas postage.
Supplier: World Data Center A, Rockets and Satellites, Code 630, Goddard Space Flight Center, Greenbelt, Maryland 20771, USA.
How to pay: Bankers draft, Mastercard, American Express or Visa card. Give card number and expiry date.
CD-Roms from other space missions are available, ask for a list.
Product: Additional Ozone Movies
Price: £8 (for two disk set)
Product: TOMS Image-to-Sprite converter
Price: £5
Supplier: Musbury Consultants, 5 Helmshore Rd. Haslingden, Rossendale, Lancs BB4 4BG

EMR

No.1

For Excellence
In Music Technology

NEW! **SOUND ENGINEER**

"An excellent range of tools...with more edit and processing functions than any other current sample editor" Acorn Computing 4/93

MICROSTUDIO 1.0G

24-track recording with unique learning system plus auto display & print of music/lyrics - used in schools all over UK

STUDIO24PLUS VERSION 3 3.0C

Unlimited tracks for Midi/samples, more edit control, more facilities than any other sequencer, plus realtime multimedia!

NEW! **DESKTOP SCOREWRITER**

The definitive program for music education and serious publishing - use it alone or with EMR's recording programs

plus

RB2, DREAMWAVE, new MUSIC PLAYER II, RECORDER, KARAOKE PERFORMER, new MICROJAZZ, MR SOUND, STORYBOOK, SONGBOOK, new upgrades, utilities & music discs, and a new range of hardware peripherals

EMR Ltd
14 Mount Close
Wickford, Essex
SS11 8HG

Free Brochure
0702
335747

Art School

EASY TO USE ART AND GRAPHICS PROGRAM WITH BUILT IN HELP FOR NEW USERS

ArtSchool has been designed as a comprehensive Art program that would fill all the needs of Primary, Junior and Home users needs. It contains tools for pencil drawing, brush painting, spray painting, lines, circles, ellipses, rectangles, parallelograms, triangles etc. with graduated fill and 256 colours. Having the ability to use clipart discs and print on any printer, it also has a selective undo rubber and complete undo of the last operation. Together with the useful facility for a teacher or parent to be able to switch off tools which are not needed, this is the easiest art package ever.

Fully icon driven with built in help.

£29.95 inc vat / postage

Demo disc £5 refundable.
Educational discounts, licenses.

MICRO STUDIO
22 Churchgate Street, SOHAM,
Cambridgeshire CB7 5DS Tel.(0353) 624997

save

x8 x4 BIG

No competition

Desktop Tracker £59.95 excluding VAT

"...programming at its best" - Acorn User January 1993

Continuing in the tradition of the immensely popular Tracker package, use Desktop Tracker to create fantastic tunes with no extra hardware.

Desktop Tracker has been completely re-written to incorporate many new and innovative features - Up to 16 tracks

- Fast playroutines
- 4 effects per note on each track, allowing up to 64 simultaneously

Real time effects include pitch bend, arpeggio, volume slide, phasor effects, note retriggering and many more.

Powerful editing facilities, including transpose, cut and paste, echo and more.

Score display allows you to see your tunes and samples in traditional stave notation format.

Public Domain playroutines and jukebox to allow tunes to be played on any machine.

Printer Port Sampler £49.00 including VAT

Compatible with all Acorn machines - plugs into the Parallel Printer Port.

"Pulse" software provided includes the following editing features - fade in/fade out, over and under sampling, zoom in/zoom out, save and edit marked section, play forward or backwards at normal or high speed.
Save in various file formats - Armadeus, Tracker, Sound Module.

QD Bug £69.00 excluding VAT

"....a must for assembler programmers, and comes very highly recommended" Archimedes World May 1993. (overall rating 95%)

QD Bug is the definitive debugger for all ARM coders both beginner and expert. It has many powerful features including: single stepping, skip and force instructions, SWI history lists and trapping, customised flexible windowing system, view BASIC sources and text files from within the program, keypress emulation with macro record and playback.

Please contact us for further details on QD Bug, or a full written specification.

SCSI Systems

Using High-Quality Conner, Quantum or Maxtor drives.
All systems are CDFS ready and are Acorn compatible.
Internal Systems (300/400/5000series)
85Mb Standard System - £259 Pro System - £289
120Mb Standard System - £299 Pro System - £339
213Mb Standard System - £399 Pro System - £439
Add £75.00 for external A3000 solution. All SCSI prices are exclusive of VAT.

A5000 Extra IDE Drives

Includes all necessary cables.
Using High-Quality Conner, Quantum or Maxtor drives
120Mb £259 +VAT
170Mb £289 +VAT
212Mb £359 +VAT

ARM3 35Mhz £219 excluding VAT

Turbo charge your machine, capable of nearly 15MIPS. A limited number only were manufactured, so this offer is limited to stocks.

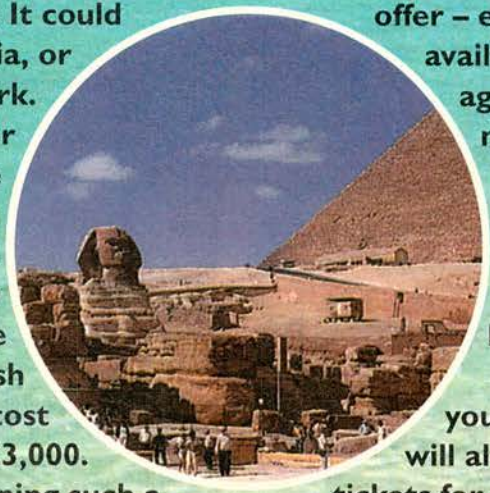
Please allow £9.00 for delivery of hard drives.

Vertical Twist

WIN A DREA

...anywhere

Later this year one of our readers will be invited to go on a holiday of a lifetime – to just about anywhere in the world. It could see you basking in the Bahamas, or cruising in the Caribbean. It could be ambling around Australia, or night-clubbing in New York. Even trekking in Tibet, or pottering around the Pyramids. Literally, the world is your oyster ! It could be a holiday for one. Or for a whole family. Just as you wish – providing the total cost comes to no more than £3,000. How do you go about winning such a fantastic invitation? Simply by completing the coupon opposite and handing it in to your newsagent. He will then enter it for this unique competition, in time for the draw which will take place on July 12.



If you win you will be asked to select the holiday of your choice from any you see on offer – either nationally advertised or available from your local travel agent. There will be absolutely no restriction on the location, or the company you choose to provide the holiday.

It will be entirely up to you to decide which is the right holiday to suit your tastes.

And that's not all. As a thank you to your own newsagent, we will also be sending him two free tickets for a fabulous holiday in Paris, staying at a top hotel, going on a grand sightseeing tour and taking in a spectacular show at an exotic night club!

£3,000 could take you here...

...or here...

...or anywhere!

AND IF YOU WIN, THERE'S A HOLIDA

M HOLIDAY in the world!

WHICH MAGAZINE FOR YOU?

ACORN – One of Britain's longest-running computer magazines, *Acorn Computing* (£2.95) is the pre-eminent choice for users of the Archimedes and BBC Micro.

COMMODORE – Three magazines serve the dedicated Amiga fraternity. For games players there is *Amiga Action* (£3.95) and *Amiga Force* (£1.95), while *Amiga Computing* (£2.99) covers every aspect of this versatile machine. Owners of the C64 will find all they need in *Commodore Force* (£2.95).

ATARI – For the Atari ST enthusiast there are three magazines – *ST Action* (£3.95) for gamers, with *Atari ST User* (£.3.40) and *Atari ST Review* (£3.50) satisfying the more general ST owner.

NINTENDO – The whole of the ever-expanding Nintendo scene is covered by *N-Force* (£.1.95), while dedicated fans of the Super NES have *Super Action* (99p) and for Game Boy freaks there's *GB Action* (99p).

PC – Most dynamic newcomer on the PC magazine scene is *PC Home* (£3.95), covering both business and leisure interests. *PC Today* (£3.95) is devoted to supplying practical solutions for the small businessman.

SEGA – All the Sega games machines have their champion in *Sega Force* (£1.95), with *Mega Action* (99p) serving the needs of Mega Drive owners *(to be launched on May 20).*

To enter this £3,000 contest, just hand this coupon in to your newsagent

I wish to place a regular order for the magazine(s) I have ticked below:
Please enter this form in the Europress Dream Holiday Competition

❒ I shall collect my copy each month
❒ Please deliver to my address:

Name _____

Address _____

_____

Post code _____ Tel _____

My newsagent's name and address:

_____

_____

Newsagent's signature or stamp

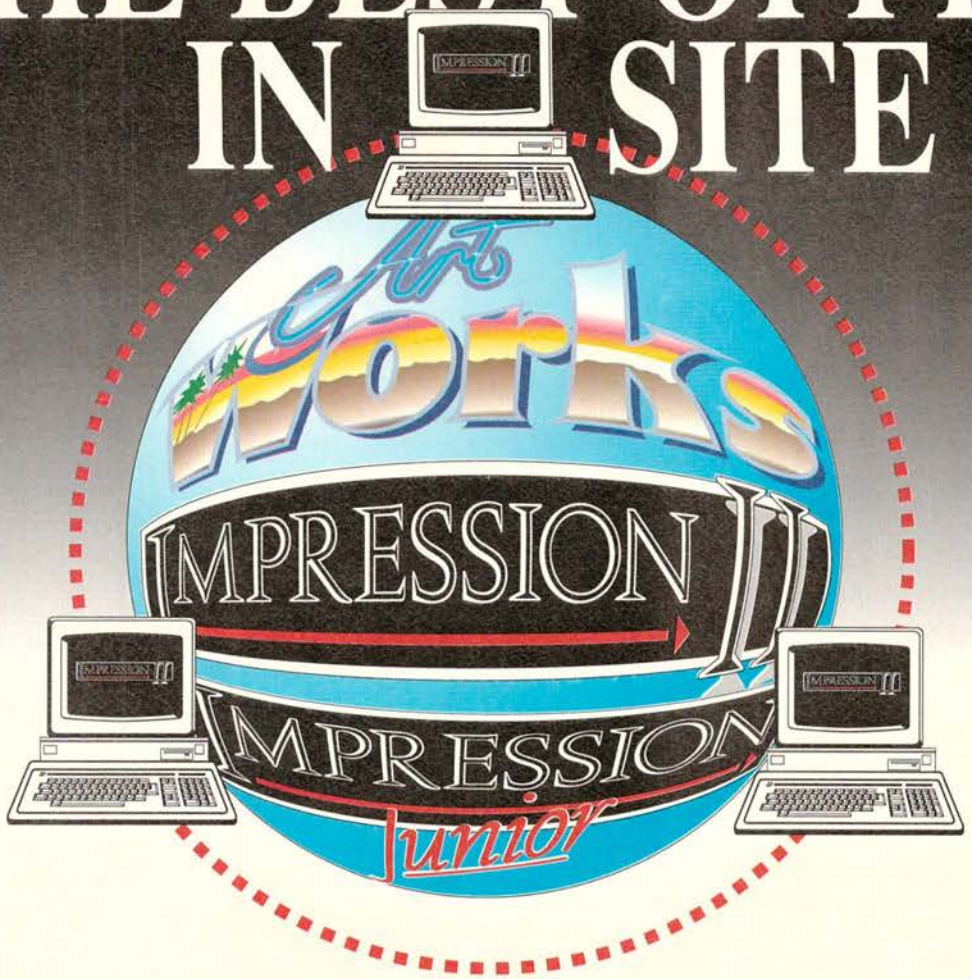
❒ Acorn Computing
❒ Amiga Action
❒ Amiga Computing
❒ Amiga Force
❒ Atari ST User
❒ Commodore Force
❒ GB Action
❒ Mega Action
❒ N-Force
❒ Sega Force
❒ ST Action
❒ ST Review
❒ Super Action
❒ PC Today
❒ PC Home

europress GROUP OF COMPANIES

MR NEWSAGENT: Please confirm this order and return the form to your wholesaler for entry in the prize draw

IN PARIS FOR YOUR NEWSAGENT TOO!

THE BEST OFFER IN SITE



If your site has more than three machines then a site licence might be your best option.

Site licences were originally designed with schools in mind, but they work equally well for any organisation that has several machines at one site. The exact number at which a site licence becomes economical varies with the product, but if your site has more than three machines then it's worth investigating further.

Impression II, Impression Junior and ArtWorks are the most popular licences. Impression II and ArtWorks come in two forms - for use on a network or for use with stand-alone machines. Network licences are now AUN compatible and can run over Econet, Ethernet or Nexus.

Impression II stand alone: £550

(+£15 per machine for each hardware key)

Impression II network: £660

(no hardware key required)

ArtWorks stand alone: £550

(+£15 per machine for each hardware key)

ArtWorks network: £660

(no hardware key required)

Impression Junior: £440

(no network required)

The licence fee includes one complete package, with manuals and hardware keys where necessary. The purchase price of a single copy, if one is already owned and registered, can be offset against the fee. The licence covers up to 20 machines, but for the larger sites additional units of 10 can be bought at a later date.

Think of it this way; if your site has 20 machines, an Impression II network licence works out at £33 per copy, when the RRP is £169. We're sure you'll agree that this pricing is attractive, which is why 3000+ sites have Computer Concepts licences !

Computer Concepts Ltd

GADDESDEN PLACE HEMEL HEMPSTEAD HERTS HP2 6EX TEL: 0442 63933 FAX: 0442 231632

Connection matters

Just what is Ethernet? Martyn Gilbert sets out to put the record straight

THIS is the first article in a short series about Ethernet and Acorn computers. With the majority of Acorn networks in school environments we'll be putting special emphasis on educational applications but the rules apply in all situations.

Ethernet is the first international networking standard to be widely used with Acorn machines. This month we will cover its main features and a little of its history leaving the various software elements providing the services needed until later.

UNTIL now, Econet has been the dominant network technology for Acorn computers. Designed originally for the 8-bit BBC Micro it has an adjustable data transfer rate of about 200Kbit per second and was a good match for the size of applications and data used.

However, 32-bit applications and data can be as much as 100 times larger. Ethernet at 10Mbit per second offers a comparable increase in the speed of the network and so restores the balance between the network and the computers connected to it.

Ethernet was conceived in 1976 by Metcalf and Boggs (honest) of Xerox PARC. Like most local area networks, its primary objective is to facilitate the rapid transfer of information between computers as economically as possible.

It allows many users access to resources that would otherwise be too costly to provide for a single user. As Ethernet is host computer independent **any** computer with a network interface complying with its standards will co-exist with any other.

Remember, it is not just the obvious items like printers, large hard disks and CD-Roms that are costly resources to be fairly shared. The cost of installation may well exceed the cost of the network adapter cards, the file server and the cable itself. It makes sense to ensure that the selection and placement of the cable reflect future needs and not just current requirements.

Ideally, everyone should have the same opportunity to share resources. A well-designed network is an asset while a badly designed one becomes an expensive liability.

By the early 1980s Ethernet was widely accepted and in 1983 the American Institute of Electrical and Electronic Engineers – the IEEE – formed the 802 committee to produce a standard from the *ad-hoc* industrial practices.

They consulted industry and produced a series of specifications accepted all over the world. Their reports also covered several ways of physically constructing a network and were not just confined to Ethernet.

Software and hardware requirements were set down in two important documents: The IEEE802.2 covering the software aspects of transferring data in a hardware independent manner and the IEEE802.3 which specifies how the actual computer hardware must behave if it is to be allowed to *sit* on the network with other computers.

In common with most local area networks, Ethernet uses cables with copper conductors to carry information *bit-serially*. Data is put on to the cable one bit at a time by a transmitting computer and then re-assembled into bytes at the receiving end.

Wiring schemes

No single wiring scheme is suitable for all possible installations. The standards specify a variety of different schemes each with different cable, connector and interface electronics specifications, known by the terms:

- 10base5 or Thick Ethernet
- 10base2 or Thin Ethernet (sometimes called CheaperNet)
- 10baseT or Twisted Pair Ethernet

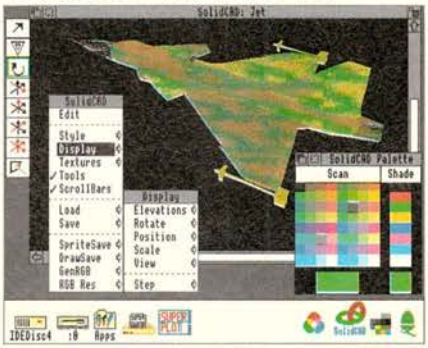
10base5 is well suited to large, campus-wide *spine* networks, connecting departmental sub-networks. 10base2 is ideal for

➤

SILICON VISION®

DESKTOP SOLUTIONS FOR ACORN COMPUTERS

SolidCAD® Release 5.1



The most comprehensive 3D CAD package available for RISC OS. It is capable of generating the fastest 3D Rendering for any design. The Jet Fighter image above was rendered in less than 2 seconds. Powerful 3D CAD facilities allow drawing in Plan, Side, and Front Elevations, Texture Mapping, Printing & Plotting, 24 bit RGB output for the highest quality images, and a unique Realtime Graphics Language for the fastest programmable animation.

"very easy to use and extremely well documented if you get stuck" - Acorn Computing.

£99.95

FilmMAKER® Release 5.1

The complete Interactive 3D Animation System. Ideal for users who wish to explore their creative talents without resorting to programming. FilmMAKER® boasts the fastest frame rendering rates, less than 2 seconds/frame for the Space Shuttle, and the smoothest flicker-free playback for animating your masterpiece. Fully compatible with SolidCAD® for designs & SolidsRENDER® for ray tracing, animation Oscars are now within your reach.

"Specifying the movements of objects is a dream" - BBC Acorn User.

£79.95

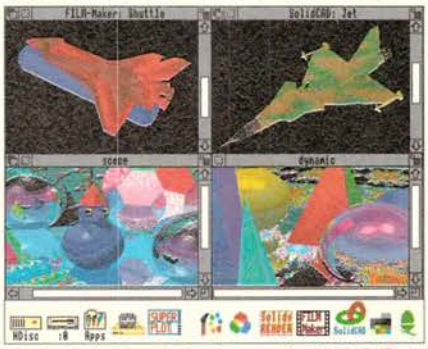
SolidsRENDER® Release 5.1

The most advanced Ray Tracing package for RISC OS. It includes a unique Accelerated ray-tracing capability for the fastest Photo-realistic rendering possible. Use standalone or import SolidCAD® designs and FilmMAKER® flightpaths for Object orientated design and Animation capabilities. SolidsRENDER® also provides the most comprehensive object properties. Why wait hours when you can now produce better results in a fraction of the time.

"the fastest ray-tracer...outputting the highest quality images" - Archimedes World.

£99.95

SolidTOOLS® Release 5.1

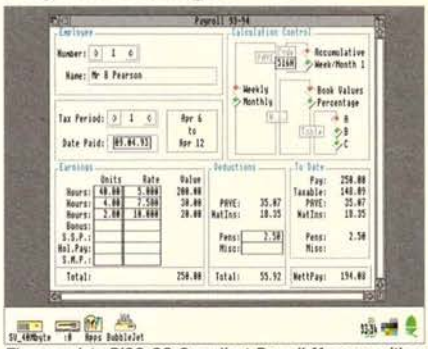


The first fully integrated environment for 3D CAD, Photo-realistic Rendering, Interactive animation, Texture mapping, Programmable animation, 24 bit RGB output and high resolution hardcopy to printers and plotters. The system provides 3D CAD facilities for Architectural, Engineering, Interior design and Teaching CDT using the industry standard 3rd Angle projection for drawing in Elevations. The package includes SolidCAD®, FilmMAKER®, and SolidsRENDER® offering a turnkey solution satisfying all your conceptual design, and presentation requirements.

"Puts Silicon Vision at the Top of the CAD market" - Archimedes World.

£275

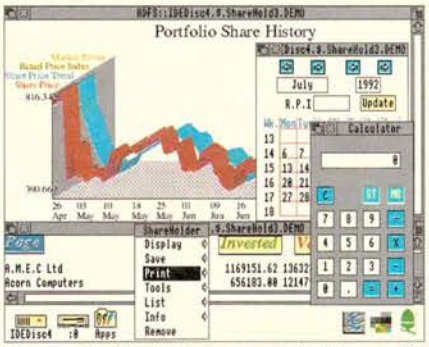
Payroll Manager™ v2.0



The complete RISC OS Compliant Payroll Manager with an emphasis on ease of use over all payroll functions, handling the latest budget changes. Features include Weekly/Monthly wages, accumulative or week1/month1 Tax basis, Book or Percentage values and selection of Tables A, B or C. Reports include Wage slips, Deductions Working Sheets, Cash Breakdown and Total Employer Expenses, plus End of Year P14/P60. Additional features include employee record searching, individual rates of pay/tax codes, and employee record locking for security. Ideal as a standalone solution or to complement your existing accounting software.

£99.95

ShareHolder™ Release 3.0

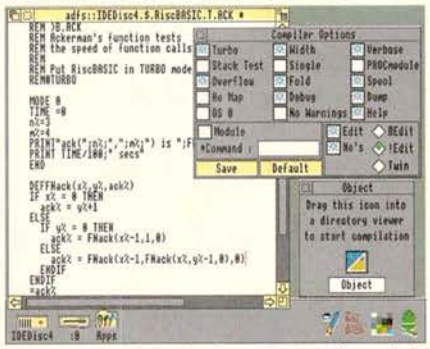


The complete share holder management system providing all the facilities needed to automate your portfolio. Features include Company statistics, Share holdings, Transaction processing, Portfolio history, Forecasts, Dividends due, Share price updates, built-in Calculator, Calendar and Hardcopy facilities for total integration. ShareHolder Professional v3.0 also includes Share trends, Retail Price index, General Market Prices and links to CEEFAX, TELETEXT & PRESTEL via a Teletext adaptor or Modem.

"An excellent concept, the first professional share related package ... well thought through ... remarkably comprehensive" - Archimedes World.

£195

RiscBASIC™ Release 3.0



The complete software development system for producing sophisticated RISC OS applications. The unrivalled RiscBASIC compiler allows you to use the interactive development environment of interpreted BASIC for fast prototyping and interactive testing followed by source code security and the fastest machine code performance of final compilation. For Forth language enthusiasts, RiscFORTH which includes RISC OS support is also available for £99.95.

"If you are looking for THE compiler to go for, and are confused about which one deserves to win the very public battle that has been raging in the advertisements, well my preference is for RiscBASIC" - RISC USER.

£99.95

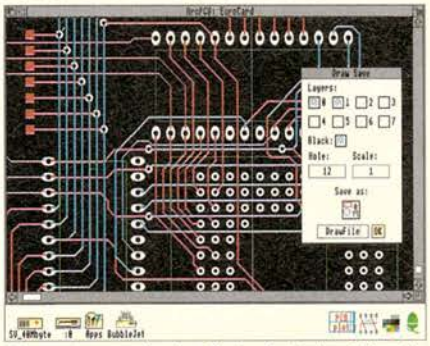
RoboLOGO™ Release 1.1

RoboLOGO provides the ideal introduction to computing. This new extension to traditional LOGO provides three dimensional control of an articulated humanoid or animal figure based on the standard LOGO language. Natural commands such as 'Walking', 'Bowing', and 'Picking', etc are automatically represented graphically by natural movements of the 3D figure which is readily understood by students. The traditional Turtlegraphics and 3D Glider features are also supported to utilise existing Turtlegraphic course work.

"Takes Turtlegraphics and LOGO into a new dimension" - Educational Computing.

£49.95

ARC-PCB™ Schematics v5.1



The most comprehensive Electronic Design Automation tools available for RISC OS. The range starts at ARC-PCB v1.8 for purely Digital PCB layout, graduating to ARC-PCB Professional v3.2 for combined Analogue/Digital PCB layout and ultimately to ARC-PCB Schematics v5.1 providing both Circuit Schematic drawing and all PCB layout features. All versions include Auto-Routing, Multiple layers, Component pulling, On-line Help, Printer & Plotter support, and up to 300,000 components. GerberPLOT & ExcellonDRILL options are £75 each. A 100% Rip-Up Retry PowerROUTER option is £195. The Alpha-Tracks Teaching Course option is £90 for a Site License with full Photocopying rights.

"Performs up to professional standards." - BBC Acorn User.

£125 (v1.8), £275 (v3.2), £375 (v5.1)

Software for BBC B/B+/M128

SolidCAD for 3D Design and the Realtime Graphics Language Rom for 3D Animation are still available for £99.95 each. The original wireframe only 3D Graphics System is available for £25. SuperDUMP and SuperPLOT for Printers & Plotters are £15 each.

All prices include VAT & Carriage. All credit cards & official orders from educational establishments accepted.

SILICON VISION LTD, SIGNAL HOUSE, LYON ROAD, HARROW, MIDDLESEX, HA1 2AG, UK. TEL: 081-422 3556, FAX: 081-427 5169.

Software Site Licenses are 3 times the RRP for use on up to 20 stations or individual machines. Enquire for specific cases.

All product titles are registered trademarks or trademarks of Silicon Vision Ltd. All other trademarks acknowledged.

Copyright © 1993 Silicon Vision Limited. All rights reserved. All RISC software support RISC OS 2 & 3 with 1Mbytes memory.

spine networks in a smaller installation such as joining a group of classrooms. Each room would be a sub-net in its own right.

10baseT is most suited to providing sub-networks. It has the great advantage that each computer is wired into the network by an individual, electrically isolated cable so damaging a single cable will only affect the machine to which it's connected. The technical details of each scheme are shown in Table I.

IEEE802 also specifies schemes for fibre optic and radio networks but the costs of these is, in general, much too high for most of the Acorn market.

It is very important to realise that these standards were written to facilitate network installations in a wide variety of sites. It doesn't follow that Ethernet will be the best solution for **all** requirements.

	10base5	10base2	10baseT
Segment length	500m	185m	100m
Nodes per segment	100	30	2
Minimum node spacing	2.5m	0.5m	None
Basic node interval	2.5m	None	None
Data transfer rate	10Mbit/s	10Mbit/s	10Mbit/s
Cable type	Thick coaxial	Thin coaxial	Two twisted pairs
Computer connector	AUI	BNC	RJ45

Table I: Technical specifications for Ethernet wiring schemes

What do the terms mean?

In the above terminology, the *10* refers to the basic 10Mbits per second that the network is designed to carry while *base* means that it uses the baseband rather that the broadband system – every cycle of the electrical signal conveys some information.

The broadband system impresses the information on some higher frequency carrier. For instance, the use of an ultra-high frequency (UHF) signal to carry TV signals. To make it clearer: Morse code operation of an electrical relay is baseband while operation on a signalling light is broadband as the intensity of the high frequency light is modulated by the operator.

In 10base5, the 5 means that a segment of the cable used to connect the computers together can be up to 500 metres long and, although it is rather inflexible to install, up to 100 computers can be connected to a single segment.

Each computer is connected to an electronic module mounted directly on to the cable which is so finely specified that the modules can only be connected to the cable at exact 2.5m intervals.

These are marked by rings printed on the outer jacket. The final connection between the computer and the module is provided by an Attachment Unit Interface (AUI) cable.

10base2 is similar except that the maximum length of the cable is 185m and up to 30 computers can be connected on a single cable segment. What sets 10base2 apart is the low-cost, flexible cable that is easily directly connected to each computer in turn.

There are no placement constraints in connecting the computers to the cable other than connections must be at least 0.5m apart. Segments of up to 185m can be connected to each other by a repeater and 10base5 can be extended in the same way. However, only four *hops* are allowed, implying a maximum network span of 925m. Only three of the five segments can have computer connections. The others are just *link segments*.

The third variety, 10baseT is a little different as the T refers to Twisted Pair telephone cable. 10baseT is not part of the IEEE802.3 specification as it came along a little later. 10baseT can be used up to 100m but only two connections can be made on a single cable segment. This rather bizarre limitation is not as bad as it first appears.

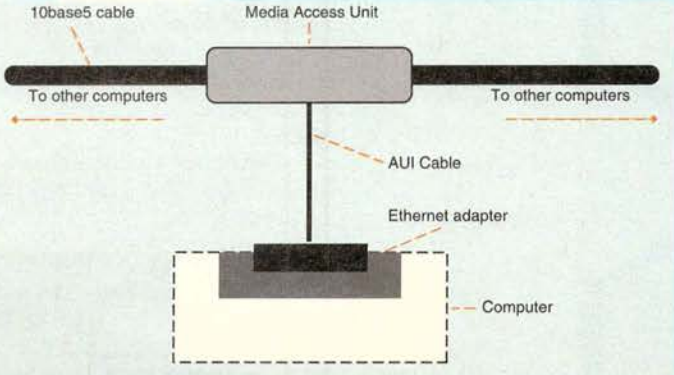
10baseT came about as a result of using spare wires in standard North American telephone cabling systems to carry Ethernet. Look at any telephone system and you will see that usually a single telephone is connected to the end of a single exchange line. Equipment in the exchange makes the final connection between one line and another connecting two telephones to each other.

A similar approach is used with the cable when used with Ethernet. A purpose-designed unit, known as the hub or multi-port repeaters are used to make the final connection between two lines. Typically a hub will have between 8 and 16 identical computer connection *ports*. More expensive hubs designed for larger installation can accommodate over 64 10baseT ports.

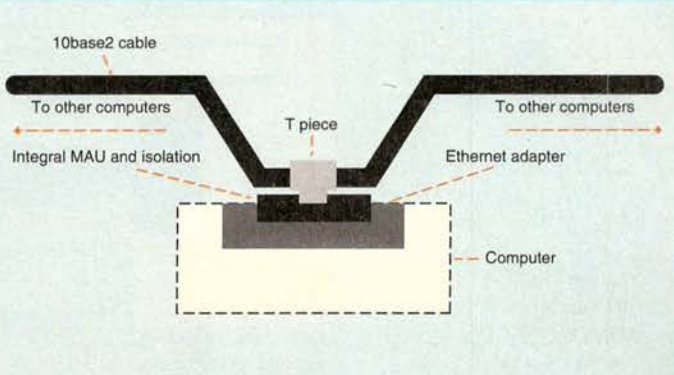
Ethernet works by having simultaneous connections to almost every computer on the network. 10baseT hubs are usually connected by a central spine. A 10base2 or 5 connection is provided on the hub for connection to a spine which is merely a cable carrying data to and from subsidiary networks hanging from it.

The total number of directly-

No one wants to waste money propping up an unreliable network



● *Connecting a computer to a 10base5 cable*



● *The easier 10base2 connection system*

Martyn Gilbert graduated from UMIST in Electrical and Electronic Engineering. He worked on microprocessor control of high power motors then moved to automotive electronics and gate array design.

In1982, he started work for Acorn Computers where he was project leader for the BBC Master.

After a spell in advanced research and development, he moved to design consultancy.

He is now MD of β (i-cubed) who design and manufacture their own Ethernet products for the Acorn range.

➤ connected computers and hubs on a spine segment must not exceed 30 for 10base2 and 100 for 10base5. The rules determining a hub's position on the spine are the same as for an individual computer.

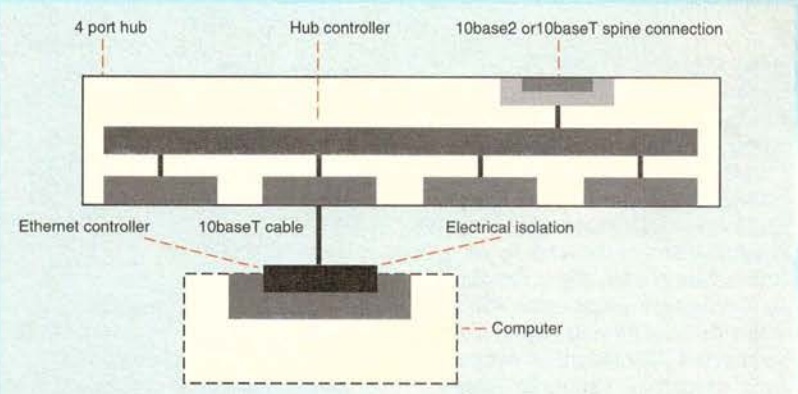
Reliability

What underpins the reliability of all Ethernet installations is that IEEE802.3 sets down exacting requirements for the electrical characteristics of the cable, the connectors and the interface electronics. The standards are vitally important – if you use an interface that has not been designed to comply with the specifications reliability – and even the safety – of the whole network is put at risk.

A design that does comply can be used with impunity and minimal risk of affecting other computers. This does not guarantee that a newcomer will be able to exchange data with those previously on a network but it does help ensure that a previously working network will keep working.

To appreciate fully how any network operates, it is important to realise that computers on a network do not *see* data simultaneously. The electrical signals transmitted by a computer take some time to travel along the cable. IEEE802.3 specifies that the cable must allow data to travel at at least 0.65 the speed of light: 195,000 kilometres per second may seem fast but it still takes 0.5 microseconds to travel 100m.

This too, may not seem a very long time but a transmitting computer will put five data bits on to the network that time. Computers 100m away will have a different view of data on the network to those close to the transmitter. Such delays play an important part in the design of a network and Ethernet has special provisions to take account of the delays.



● *Using a hub for 10basedT systems*

Econet problems

Computers on an Econet are directly connected to the network cable. In the event of a fault, excessive current can flow from the cable into the computers. The usual result is that some parts in the computers are destroyed.

Econet users in larger sites may well be familiar with the scenario of returning to school after the long summer recess to discover a non-working network. This is due to the usual summer reduction in groundwater reducing the effectiveness of mains earthing provisions. Summer is also the time of peak atmospheric electrical activity and the combination of the two can present network interfaces with voltages they cannot withstand.

Ethernet uses magnetic coupling in miniature transformers to link individual computers to the network. There is no path for direct current so the network and computers are both protected. This is a good example of the way the original Ethernet designers set about producing a reliable system not just the cheapest one.

The cost of network *downtime* is extremely high. In business sums of money far greater that the original network cost can be lost very quickly if the network is unreliable while in education time lost in the classroom is very damaging and difficult to make up.

Education requirements

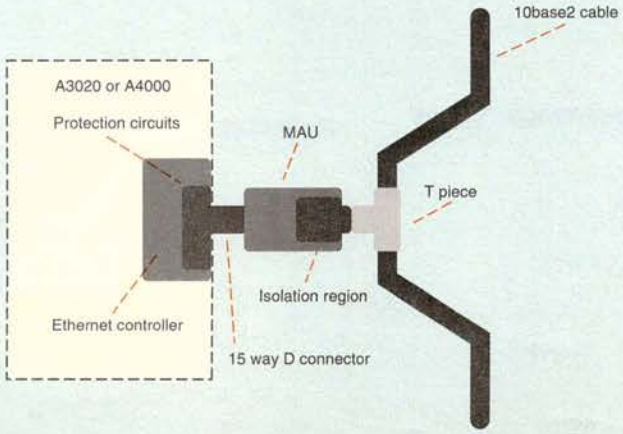
Educational use of Ethernet imposes a number of special demands. Mixed-computer compatibility with the need to add Archimedes computers to existing non-Acorn Ethernets and vice versa.

It will be apparent why compliance with the standards is so important. If designers have worked to the standards the resultant network should work.

Maintenance is of particular importance in schools. The network itself and the individual computers on it have to be considered. A network designed to IEEE802.3 will be as reliable as is economically possible. No one wants to waste money *propping up* an unreliable network. Wasting staff and time due to an unreliable network is even more of a nuisance as schools become masters of their own budgets.

It is the responsibility of those who provide network components to ensure that the advice given is accurate and appropriate to the recipient as well as developing products with these criteria in mind.

● *Next month we'll take a further look at hardware requirements and features plus an overview of the software that drives the system.*



● *The A3020 and A4000 do not comply with IEEE802.3 and shouldn't be connected direct to Ethernet*

CU ELECTRONICS

For all A3000 & A3010 users

21Mb Internal HardCard
£179

40Mb Internal HardCard
£229

60Mb Internal HardCard
£259

84Mb Internal HardCard
£289

A3010 2Mb inc 21Mb H/D
£559

A3010 2Mb inc 60Mb H/D
£649

A3010 2Mb inc 84Mb H/D
£679

CU ELECTRONICS

65A MIDDLE HILLGATE
STOCKPORT SK1 3EH

TEL: 061 476 0576

All Acorn products available

from small seeds...

...grow mighty Acorns

A very powerful and complete
DESKTOP PUBLISHING SYSTEM
at a lower cost than ever before...

Publishing Pack

FOR THE ARCHIMEDES

With the recent release of the BJ-200 inkjet printer it's possible to create a very powerful and complete desktop publishing system at a lower cost than ever before. We are bundling together the BJ-200, Impression Junior and ScanLight 256 in a single package, called the Publishing Pack, all for less than £500. The Publishing Pack is ideal for educational desktop publishing or for the office at home. It provides all you need to produce top quality documents - you just supply the computer.

We believe each of these products is best in its class and they complement each other perfectly.

The BJ-200 prints at 360dpi, which means it is able to reproduce top quality scanned images and text (practically indistinguishable from a laser printer) and thanks in part to the TurboDrivers it is also the fastest printer in its class.

ScanLight 256 can capture photographic quality images and is supplied with software that provides image enhancement capabilities. This is the simplest way to get quality pictures into your documents

Impression Junior is part of the Impression family, which has become the most successful word processing/DTP program on the Archimedes. For the educational or 'office at home' user Junior is the ideal combination of word processor capability and desk-top-publishing features.

To make this package even more attractive we are giving Impression Junior free when you purchase the BJ-200 and ScanLight products together. Taking into account the discount we already offer on the BJ-200 printer, this means you can save over £200 on the recommended retail price (inc VAT) of the individual components. Look at the standard prices and compare the total with our Publishing pack price.

To see exactly what this combination is capable of, please 'phone for a sample page printed on the BJ-200, produced using Impression Junior and containing an example ScanLight scanned picture. Full details are also available on the individual products.

Finally, just in case you are not completely satisfied with the system, we offer a 14 day, no-quibble, money back guarantee.

The normal MRRP of the products in the Publishing Pack:

BJ-200 Printer	£329.00
ScanLight 256	£199.00
Impression Junior	£89.95
Total	£617.95
VAT	£108.14
Total incl. VAT	£726.09

Our special bundle price:

Publishing Pack	£475.00
VAT	£83.12
Publishing Pack incl. VAT	£558.12

Add £10.00 +VAT Carriage

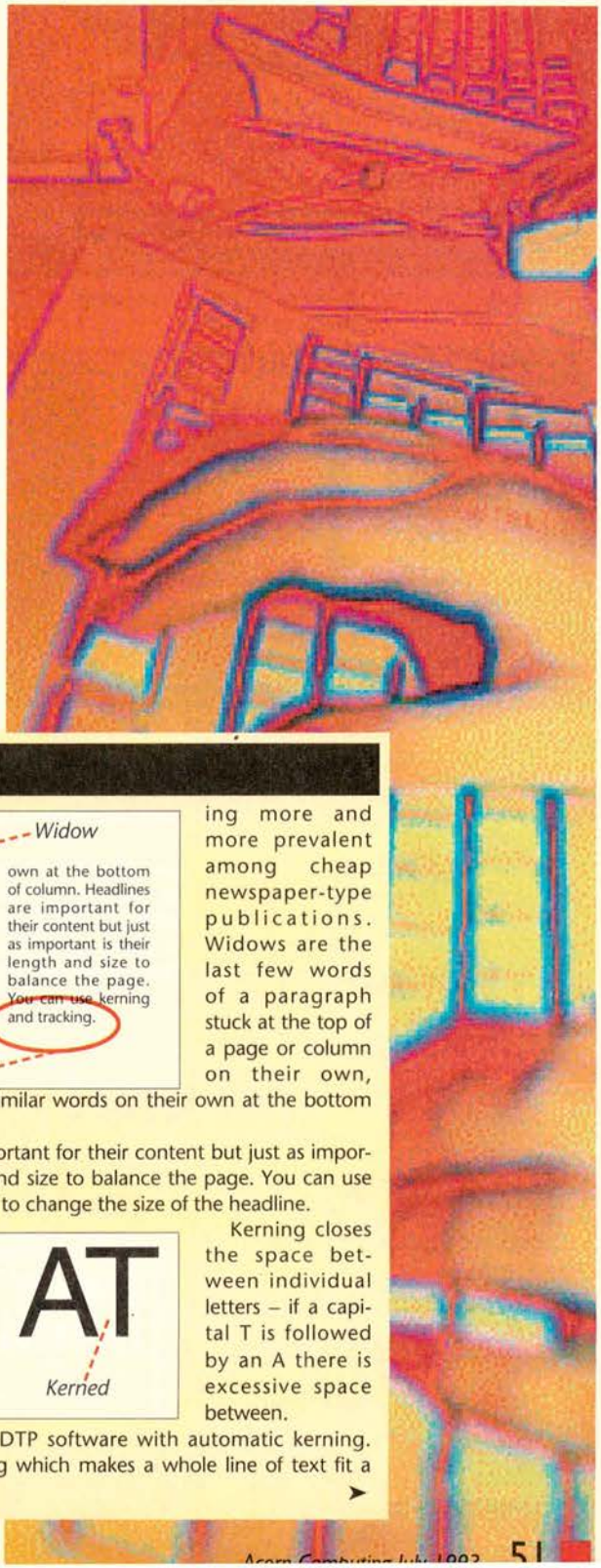
2Mbytes RAM recommended. Compatible with all Acorn computers. The ScanLight scanner requires an interface board to be installed inside the computer - we can provide versions for all Archimedes computers but please specify which computer when ordering.

Computer Concepts Ltd

GADDESDEN PLACE HEMEL HEMPSTEAD HERTS HP2 6EX TEL: 0442 63933 FAX: 0442 231632

Lending a hand

Improve your DTP knowhow with 30 utilities plus Jo Giles' hints and tips



WHATEVER reason prompted your purchase of a 32-bit Acorn, sometime you'll want to do some wordprocessing or even try a little DTP. Of course, you're going to need software to do this and at least access to a printer in order to view the hard copy of any endeavours.

There is a choice of excellent wordprocessing and DTP packages for different pockets and ability levels, but what can confuse people is the curious collection of *utilities* aiming to make life easier.

But what is a utility? A simple rule of thumb is that an application lets you create and modify a document in various ways to produce a finished end product while a utility is often a small program that performs a limited number of specific functions. Needless to say, there is a certain amount of grey area involved here.

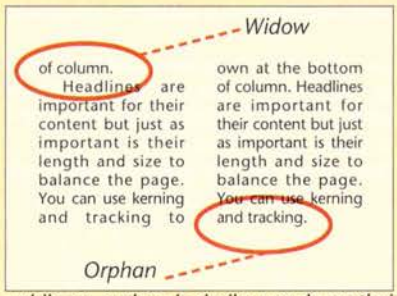
And why do you need these utilities? DTP utilities are especially useful if you are using limited software – you can create some very credible documents using Paint and Draw and often these additional programs help overcome problems, provide a shortcut or add that special touch to make something that little bit special or professional looking.

Fifteen keys to success

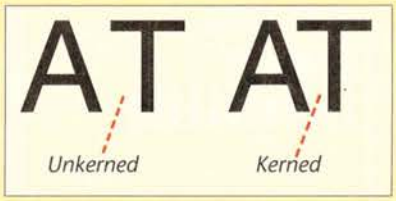
One of the biggest mistakes with DTP is thinking that just because you've got the programs you know everything about the subject. Well it just isn't the case – after all, having a hammer and chisel doesn't make you a sculptor and it takes years of training, practice and apprenticeship to become a professional.

Remember, DTP isn't about content but presentation and feel – when DTPing you're not a writer but a designer. In the words of an experienced art editor: "It's just words and spaces".

- Always keep an earlier version of your work. Saving regularly is vital but if you take a dislike to the latest amendment you have burnt your boats if you overwrite the original. If you're really unsure, save under different names.
- If you are planning to incorporate tables or charts into your work but they won't fit vertically, bear in mind that documents or books should be turned clockwise to read if you want to lay the tables out horizontally.
- If you are going to be producing something on a regular basis you need to decide the *look* you want for the leaflet, brochure, newsletter or whatever. By having a style, people will recognise what they are looking at before they start reading.
- The use of *white space* or empty areas around pictures or blocks of text is a simple way to make your work look more upmarket. The more you use, the more professional your work will look.
- *Widows and orphans* look bad but are unfortunately becoming more and more prevalent among cheap newspaper-type publications. Widows are the last few words of a paragraph stuck at the top of a page or column on their own, while an orphan is similar words on their own at the bottom of a page of column.


Widow
of column.
Headlines are important for their content but just as important is their length and size to balance the page. You can use kerning and tracking to
own at the bottom of column. Headlines are important for their content but just as important is their length and size to balance the page. You can use kerning and tracking.
Orphan

- Headlines are important for their content but just as important is their length and size to balance the page. You can use kerning and tracking to change the size of the headline.



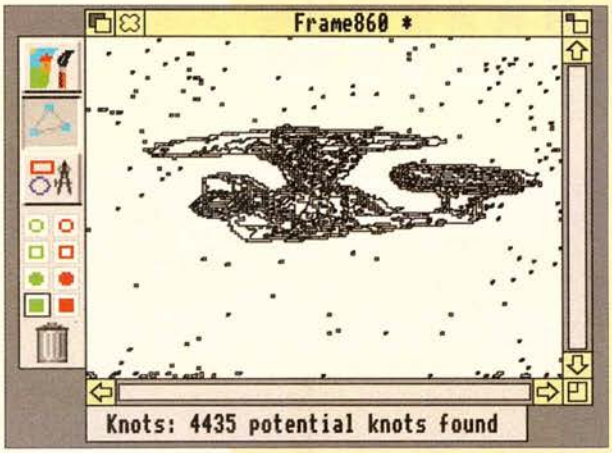
Kerning closes the space between individual letters – if a capital T is followed by an A there is excessive space between.

You'll often find DTP software with automatic kerning. Ovation uses tracking which makes a whole line of text fit a ➤

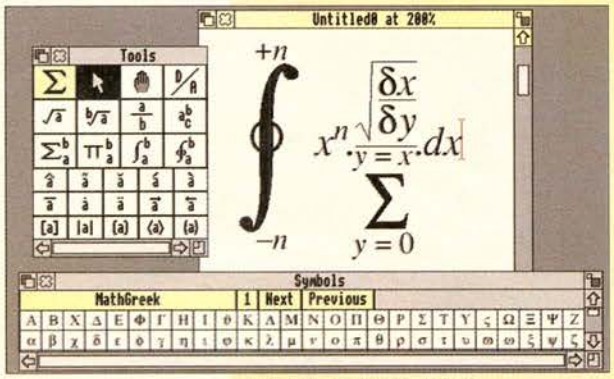
Fifteen keys to success – *continued*

➤

given space. Risc OS 3 fonts have kerning tables built in and if asked the font manager will do automatic kerning according to the table. For example if you type A T, the table will close up the gap without any help.



● *Image Outliner: Converting sprites to draw files*



● *Equasor: You can take control of formulae*

● If you are using scanned images there is usually one part of the picture you are interested in – the head and shoulders of a person, for instance. You can use Paint, Draw or the frames of a DTP package to crop the picture for the best effect.

● One of the clues to a new DTP user is the number of fonts used in a piece of work. A maximum of three should be used in one document though you can vary the weight – bold, italic and so on – as well as the size. Never use display fonts such as Fancy Dress or Bubble in main copy because they require too much effort to read.

● Never adjust the *size* of a typeface to make text fill a space. You can add or delete words but different sizes on the same page look very untidy and unprofessional.

● Depending on your software and on your model of Acorn 32-bit machine – Risc OS 2 or 3 – you can access different screen modes to work in. For a guide to these see the Newcomers article on Modes in this issue.

● When choosing a font to use think of your audience. Fonts fall into two basic categories, Sans Serif and Serif. As serifed fonts – such as Trinity and Pembroke – have been used for over 500 years their use gives more authority to the words. To balance this sans serif fonts – Homerton and Vogue, for example – started last century and given a more modern feel.

● 1Mb users can run out of room quite quickly. Note the points made in the Modes article, but also remember that pictures take up much more memory than text. To save memory see if your software will permit you to turn off the graphics display which will also increase the speed of the screen redraw.

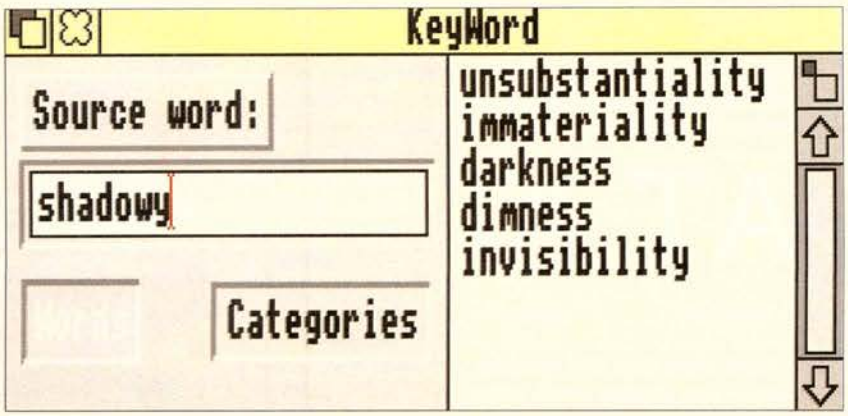
● One trick of the trade if you only have access to a dot-matrix printer is to output the document larger than you want it and ask your printer to reduce it before duplication. This camouflages irregularities around the letters to give a smoother look.

● If you are producing a piece of work to be given to a printer for multiple copies, make sure it is as clear as possible. Use a good paper – inkjets give better results if you use a slightly shiny paper. Make sure that the heads are clean on your printer and if you're using a ribbon make sure it is a new one.

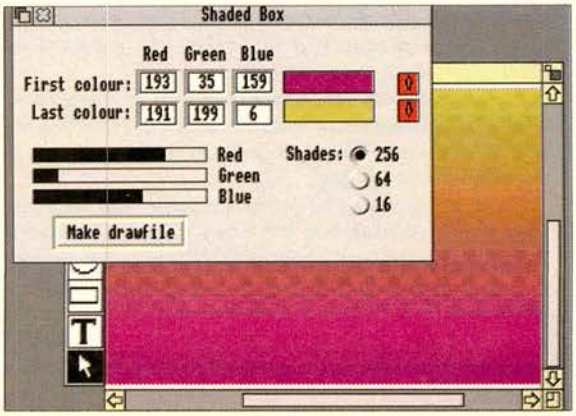
● If you plan to use a bureau they'll more than likely require the documents in PostScript format. Check which fonts they have access to. If they don't have the ones you want to use make the word(s) into a drawfile using Risc OS 3 Draw or DrawPlus on Risc OS2, Impression's FontDraw, FontFX or TypeStudio. There are one or two Risc OS bureaux now but the problem with fonts can still apply.

Books to help you out

Budget DTP: A Dabhand Guide by Roger Amos (Dabs Press)
Desktop Design: Getting the professional look by Brian Cookman (Blueprint)
Desktop Publishing on the Archimedes: DTP for all by Bruce Goatly (Sigma Press)
Desktop Publishing: Design basics by A. Holmes et al (Blueprint)
First Impression by Stephen Ibbs (WordProcessing)
Good Impression by Stephen Ibbs (WordProcessing)
DTP Seeds by Mike Matson (4Mation)
Design for Desktop Publishing by John Miles (John Taylor Book Ventures)
DTP at a Glance by Rob Pickering (Bookmark Publishing)
A Dabhand Guide: Impression by Anne Rooney (Dabs Press)

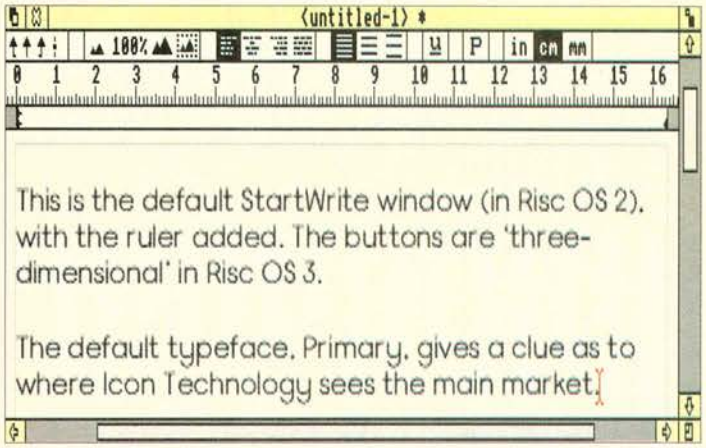


● *KeyWord: Get your words' worth with a thesaurus*

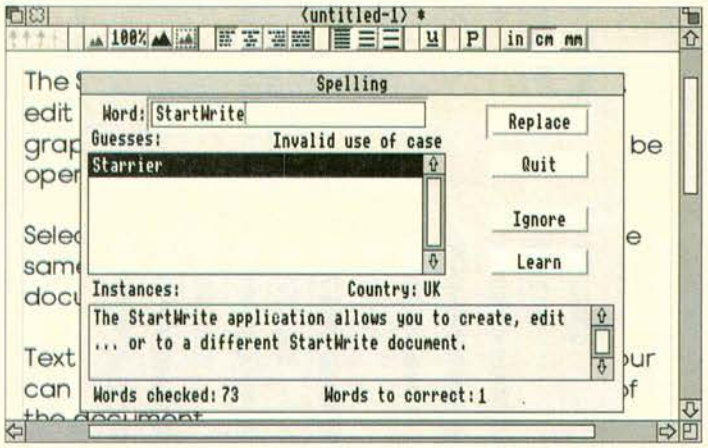


● *Shade: Produce a whole range of colours*

Product	Supplier	Cost	Comments
AlterImage	Irlam (0895 811401)	£99	Crops, sharpens and adjusts colour balance of scanned images and converts from one format to another.
BestForm	Klein (01049 6142 81131)	£49	Formula editor containing powerful matrice editors for transposing or mirroring a matrix.
Chameleon 2	4Mation (0271 25353)	£37.50	Changes the colours and hues of any object in a Draw or Poster file without ungrouping and saves as drawfiles or colour separations.
ChangeFSI	Wild Vision (091-519 1455)	£22	Enables high-quality images to be displayed in full colour and scaled without losing quality.
ColourScreen Mac	HCI (0223 314934)	£95	Converts Apple Macintosh bitmap files into Acorn sprites and vice versa. Also contains data transfer software and lead.
ColourSep	ICS (051-625 1006)	£15	Generates four-colour separations in CMYK – cyan, magenta, yellow and black, for use with colour printers.
Creator	John Kortink	Shareware	Converts Acorn sprites to image formats for other machines, such as GIF and TIFF.
Desktop Thesaurus	Risc Development (0727 840303)	£19	With over 17,000 words and a hotlink with Ovation but multitasks with other Risc OS programs.
DrawAid	Carvic (0309 672793)	£10	Enables you to produce drawfiles directly from Basic programs.
DrawBender	ICS (051-625 1006)	£15	Distorts drawfiles into a mould you've designed which you can load into any drawfile-accepting program.
Equasor	Computer Concepts (0442 63933)	£49	Equation generator which transfers equation as a drawfile to any drawfile-accepting program.
Express	Midnight Graphics (061-766 8423)	£51.02	Customises type styles to create logos, labels, presentations, cards with added colour, shadow and so on.
Fontasy	ICS (051-625 1006)	£15	Produces high quality graphics in drawfile format from outline fonts with text coloured, distorted, shadowed and so on.
FontFX	DataStore (081-460 8991)	£10	Creates drawfiles from text strings using the character definitions in outline fonts with your own added special effects.
Fontlist	Design Concept (031-668 2000)	£3	Creates a list of available fonts as a drawfile suitable for any drawfile-accepting program.
Freehand	Design Concept (031-668 2000)	£5	For when Draw won't cope with complicated patterns such as handwriting or cartoons.
Glimpse	Sherston (0666 840433)	£8.95	Displays miniature versions of all sprite and drawfiles without loading Paint or Draw, so you can find the one you want.
Image Outliner	Iota (0223 421542)	£79	Converts colour and mono sprites to drawfiles using sophisticated curve fitting techniques with the ability to hand tune and built-in cleaning routines.
Impression Business Supplement	Computer Concepts (0442 63933)	£49	Collection of utilities for mailmerging, Expression-PS for creating colour separated PostScript files and Impression loader modules for some PC and Macintosh applications.
Italic	Design Concept (031-668 2000)	£10	Transforms Risc OS 2 fonts to produce a totally new *oblique* version. Doesn't take new fonts from Risc OS 3.
KeyCaps	Design Concept (031-668 2000)	£4	Previews any font on screen before you use it in an application.
KeyWord	TCA (0582 761395)	£12.95	Multi-tasking thesaurus with 10,000 words which can be dragged directly into other packages.
LoadImage	Design Concept (031-668 2000)	Free with order	View a sprite or Clear file in a window.
Placard	ICS (051-625 1006)	£10	Prints drawfiles across several A4 sheets to produce large signs and so on.
QuickTile	Desktop Projects (061-474 0778)	£25	Creates large posters from any Risc OS application regardless of paper size.
Shade Design Concept	(031-668 2000)	£4	Provides gradient fills for drawfiles.
ShapeFX	Data Store (081-460 8991)	£10	Creates frame borders for DTP packages using Draw objects.
ShowPage	Computer Concepts (0442 63933)	£149	PostScript-compatible interpreter allowing PostScript files to be output to a window or sent to any type of printer.
TableMate	Dalriada Data Technology (0926 53901)	£21	Quick and easy way to create tables of data, export directly to Impression or as drawfiles.
Trace David Pilling	(0253 852806)	£5.99	Turns sprites into drawfiles including coloured sprites. Comes with D2Font which turns drawfiles into outline fonts.
Tracer Midnight Graphics	(061-766 8423)	£52.13	Paint to Draw conversion for turning sprites into editable, object orientated drawfiles.
Translator	John Kortink	Shareware	Converts various foreign format illustrations to Acorn sprite files.
TypeStudio	Risc Developments (0727 40303)	£45	Manipulates outline fonts into different shapes, angles, shadow, three dimensions and so on for export into Draw or DTP packages.


⟨untitled-1⟩ *
100%
P
in cm mm
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
This is the default StartWrite window (in Risc OS 2). with the ruler added. The buttons are 'three-dimensional' in Risc OS 3.
The default typeface. Primary, gives a clue as to where Icon Technology sees the main market.

● *A first view on a StartWrite window*



● *StartWrite's spelling checker offers contexts*

EVER since Acorn brought out 1st Word Plus, users have criticised it for various shortcomings but there seems to have been a marked reluctance among software houses to develop a decent but simple wordprocessor native to Risc OS.

True, we have DTP with wordprocessing facilities in Impression Junior and Ovation and even the multi-purpose PipeDream, but word processors such as Protext 5, InterWord and Graphic Writer are non-multitasking, being either ported from other machines or pre-Risc OS.

Now, following on from the introduction of the biggest-ever family of 32-bit Acorn machines, come two new packages – StartWrite and Wordz – designed to appeal to this consistently popular market.

StartWrite

FIRST came EasiWriter, then its big brother TechWriter. Now, from the same stable, comes StartWrite. Because of the existence of forerunners it's tempting to view StartWrite as a cut-down version of EasiWriter rather than as a wordprocessor in its own right. Tempting, but not altogether fair – because it deserves serious consideration for itself.

The program comes on a single disk accompanied by a 60-page manual. The disk contains the !StrtWrite application, some example documents, three other tutorial documents and a Primary font in normal and bold weights.

The manual has two main sections: A tutorial in 10 easy stages and a brief reference chapter of terms and techniques, as well as a glossary and index.

Opening a document window results in a relatively familiar wordprocessing sight. Above the text window is a row of controls, starting with four types of tab, and zoom and justification buttons. Alongside these are three buttons to control line spacing, ranging from single through to double.

Next comes an underline button, then one marked with a P for cancelling all applied effects and reverting to plain type, and finally three for selecting the units on the text ruler.

For beginners, StartWrite is set up for using the Primary font in a large size, making text clear and easy to read. This can be changed by altering the Resources file – carefully – or by saving a different default document and telling StartWrite to use it on start-up.

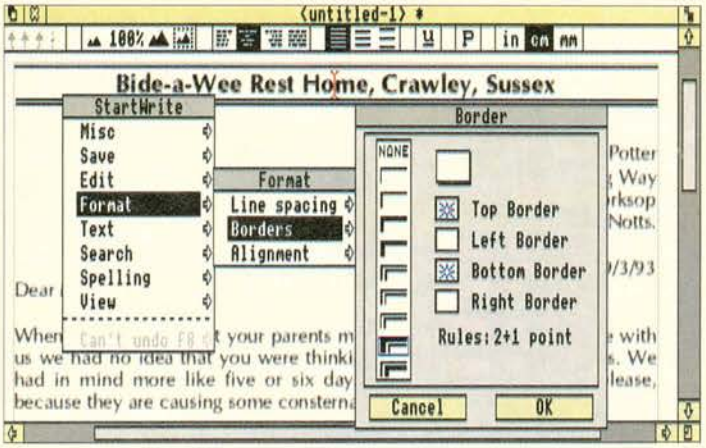
Fully featured

All the items that you would expect a wordprocessor to provide are here: Saving text and selected passages both as documents and as straight text, the normal text editing functions, justification, margins, indents and tabs, headers and footers.

The buttons for changing the

In their own write

Bruce Goatly looks at a brace of new wordprocessors for the 32-bit Acorns



● *Items in StartWrite can have borders round them too*

● *Putting an illustration in a StartWrite document*

view scale are nicely intuitive to use. The spelling checker works fast and has the merit of placing the queried word in its contexts.

The spacing controls provided are the equivalents of single-spaced, double-spaced and one-and-a-half spacing.

Changing the font to the relative italic or bold is a bit fiddly, because it can only be done via the Text menu. Inserting the date is easy but there is no documented way of changing its format or of ensuring it is updated automatically.

The search function allows wild cards, and lets you apply an emphasis – such as underlining – to a word or phrase once found.

A nice feature in StartWrite's text editing is the ability to extend a selection in units larger than single letters – once a word or paragraph has been selected, clicking Adjust in a different one highlights all the words or paragraphs up to and including it.

There is, however, no single-step way of selecting the whole text to apply – say – double spacing throughout.

Pictures – sprites and Draw files – can be dropped into a document and behave like a part of the text. They can, of course, be scaled and cropped by dragging edges and corners, and scaling always retains the picture's original aspect ratio. Pictures can also be exported again.

Safety net

The most comforting facility is the one-step Undo – a concept unfamiliar to wordprocessing on the Acorn 32-bit machines but common on the Macintosh.

And provided you save to disk often enough the Revert option can help out where Undo can't, by abandoning all the work since the last save operation and reloading the last saved version.

The printing options cover the basic requirements and include the ability to pause between pages. There's no draft printing facility, though.

Putting aside the matter of older siblings, on its own merits StartWrite comes across as a straightforward, uncomplicated, load-and-go wordprocessor. The choice of font supplied confirms that it is aimed particularly at the educational market.

In use it is simple enough for even young children to get to grips with, yet it contains enough features to make it of benefit to home users too. And for those looking for more, such as mail merging facilities, Icon Technology offers upgrades to EasiWriter or TechWriter for the difference in price.

Latest developments

In the newest version – 2.00 – several improvements have been made, among them enhancements to the button bar such as italic and bold buttons. *Drag* and *drop* to make moving text ridiculously easy, and the addition of speech facilities by interfacing with the two most popular speech modules.

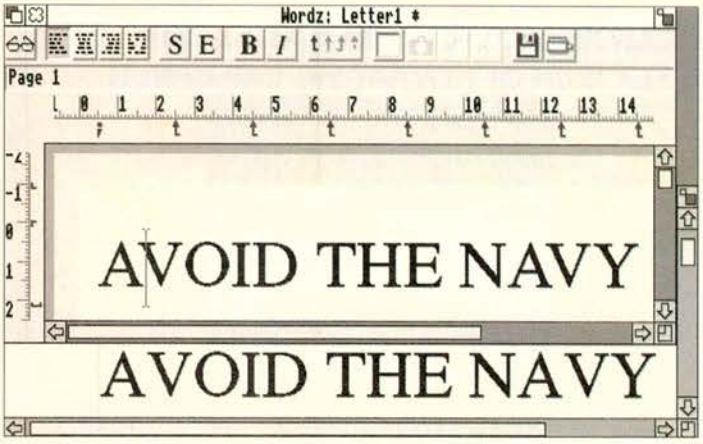
However entertaining and gimmicky a speaking wordprocessor may seem, it does have serious applications to Special Needs education despite the frequently eccentric pronunciation. And up to a point it could be helpful in picking up spelling errors as you type.

Bruce Goatly is Head of Publishing at Britain's leading scientific society. In the 15 years he has worked there he has seen typesetting technology move from hot metal to desktop publishing and has introduced DTP processes to his office. He is a regular contributor to *Acorn Computing* and his book *Desktop Publishing on the Archimedes*, has been well received.

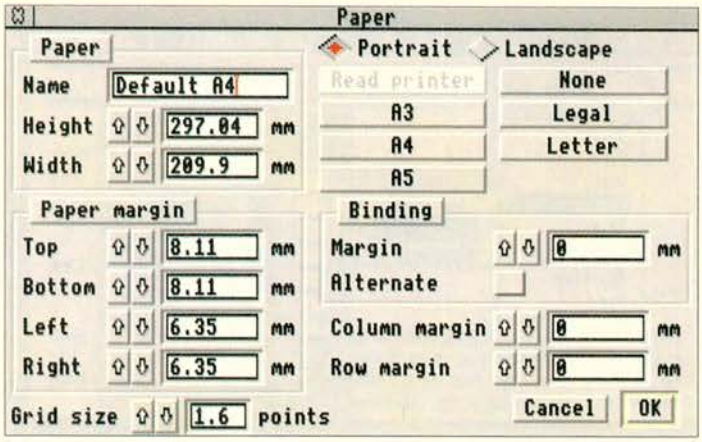
● *Simple tabulation in StartWrite*

PRODUCT SPOTLIGHT

Product: StartWrite
Price: £69
Supplier: Icon Technology Ltd, 5 Jarrom Street, Leicester LE2 7DH.
Tel: 0533 546225
Requirements: 2Mb ram



● *Wordz offers the subtlety of automatic kerning*



● *Wordz' comprehensive paper definition dialogue*

Wordz

COLTON Software have built up a good reputation over many years with the PipeDream series, combining wordprocessor, database and spreadsheet functions. Sensibly, with Risc OS's ability to multi-task and let applications talk to one another, they have decided to bring out a series of separate programs for each function, giving greater potential for development. The first of this new set is Wordz.

The distinctive blue and bright orange box contains a well-written 174-page manual, a registration card and a sealed envelope with two disks – one containing the programs and the other some useful example and tutorial documents. No outline fonts are provided so you have to make your own arrangements or have Risc OS 3, which is preferable.

Clicking on the iconbar icon doesn't necessarily open a window, offering instead a list of template documents if more than one exists. The default startup window – called Letter – has very little text area showing, as it consists mainly of a button bar, a status line, a ruler at the top containing margins and tab stops, and a ruler at the side.

Some of these can be turned off if you don't want them. Something I liked particularly was the use of the status line to confirm what item you are about to move on the ruler and what its position is – most other packages don't give you these clues and you can often pick up the wrong item.

The functions on the button bar are mainly what you would expect – four alignment icons, four tabs, a disk icon for saving and a printer icon for printing.

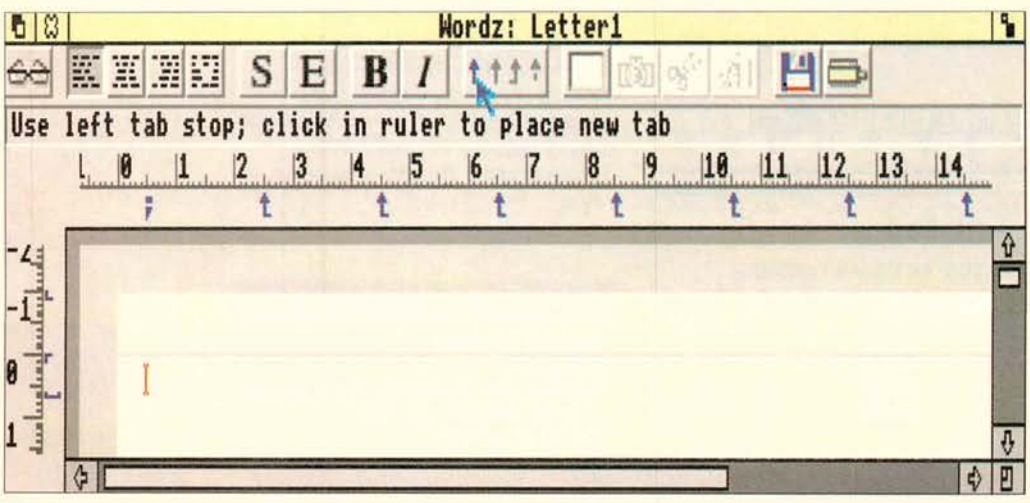
In addition there is a pair of glasses for changing the View options, S and E icons for creating or changing styles and effects, B and I icons to turn bold and italic type on and off, and cut, copy and paste icons. Lastly there's an icon for selecting the whole text, which is also highlighted when a passage is selected.

Strong points

Tables are one of Wordz' strengths, enabling large and complex tabulations to be created with relative ease. This is where the row borders really come into their own by giving you great control over positioning of rows, columns and individual cells. You can even give individual cells different background colours if you must.

Wordz has the helpful ability to make tables that cover more than the width of a page – it simply creates a new page alongside. Viewing two parts of the same document, either horizontally and/or vertically, is simplified by being able to split the window from the View dialogue.

The other major function – only added in version 1.02 – is mailmerging. This is pretty intuitive to use, though the steps required to view each record from the data file in its merged form are tedious. It would be more convenient to have the chance to view each letter before printing, with the option to skip it, print it or abort the print run.

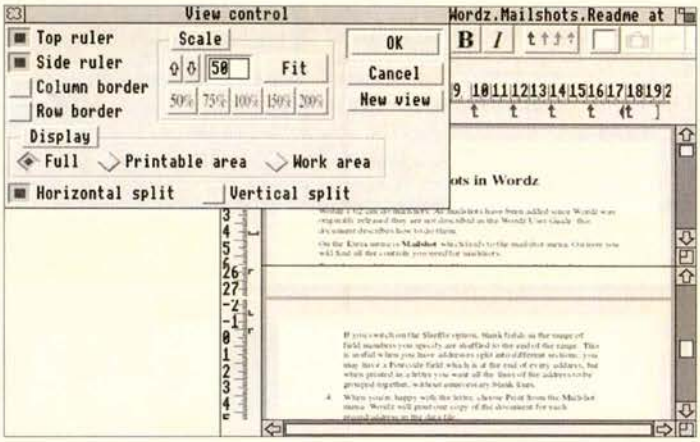


● *The elements you'll find when opening up a Wordz window*

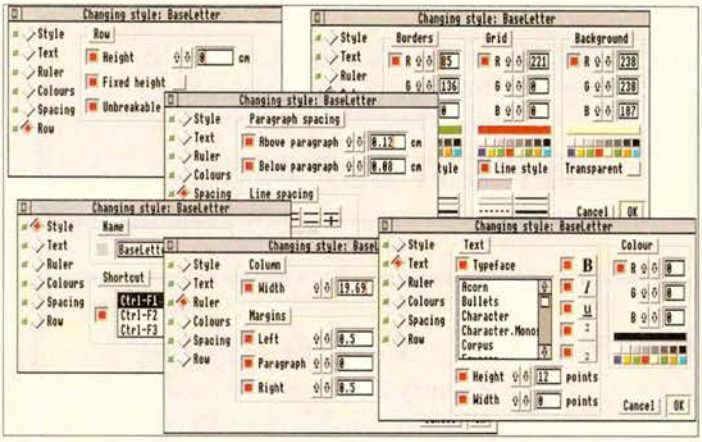
Processing the word

For the inexperienced, the main menu is reassuringly short – just five items. Standard word processing is straightforward and made easier by the B and I buttons whose functions, like many of the others, are duplicated by key shortcuts for convenience as you gain experience.

A nice feature is the word count – not only can you count the total



● *Two views on the same Wordz document thanks to a split screen*



● *Six dialogues for setting styles in Wordz*

words in your document but if a portion of the text is highlighted the count is shown for the selected text. Wordz merits an extra cheer for being the first wordprocessor to make use of the auto-kerning built into the Risc OS 3 fonts.

Styles and effects are two ways of altering the appearance of text. Styles have names and can be applied at different points in a document or layered on top of one another to build up more complex ones.

Local effects

Effects are local to the place at which they're created – they can't easily be used again. Because each effect or style is applied to a *region* of text it can be hunted down with the Region command and selected for modification or removal.

The range of elements covered by styles and effects is wide enough to need six linked dialogue boxes. You can define not only typeface, size and colour but even paragraph border colours and – for tables – grid colours.

The built-in spelling checker has an impressive turn of speed and differentiates between words that can start with a capital or lower-case letter and those that must start with a capital. A queried word in the text is highlighted but isn't always brought into view if the text is wider than the window.

The current date can be inserted anywhere in the document, and can optionally be updated automatically whenever you reload it – a very welcome feature.

Importing illustrations, whether sprites or drawfiles, is as easy as dragging a file to the desired point on the page. Pictures can be stored in the document either as the images themselves or by reference to their original filenames – a process familiar to PipeDream users – which saves on disk space.

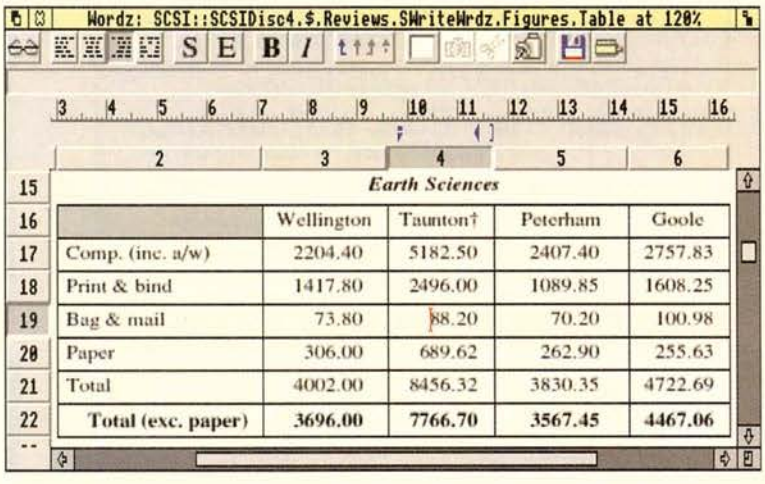
Pictures can be placed in front of or behind the text but not within the text itself, so you have to format the text around any illustrations if necessary. A picture can also be made into a backdrop, which is useful for making your own stationery.

Printing can be initiated from the button bar, from the menu or by pressing the Print key. The printing options are extensive – not only can you output the text in draft form using your printer's native characters, but you can choose non-consecutive pages. Pamphlet printing is also supported.

Wordz has just about everything a wordprocessor should have, and by and large it achieves its dual aims of simplicity in use with versatility. Aside from a few small niggles on details, such as a quirky effect of the Home key, a minor problem with the bold and italic buttons and an idiosyncratic habit of leaving both spaces behind when you delete a selected word, I found it decidedly stylish.

PRODUCT SPOTLIGHT

Product: Wordz
Price: £99
Supplier: Colton Software, 2 Signet Court, Swanns Road, Cambridge CB5 8LA.
Tel: 0223 311881
Requirements: 2Mb ram



	Wellington	Taunton†	Peterham	Goole
Comp. (inc. a/w)	2204.40	5182.50	2407.40	2757.83
Print & bind	1417.80	2496.00	1089.85	1608.25
Bag & mail	73.80	88.20	70.20	100.98
Paper	306.00	689.62	262.90	255.63
Total	4002.00	8456.32	3830.35	4722.69
Total (exc. paper)	**3696.00**	**7766.70**	**3567.45**	**4467.06**

● *Using Wordz to put together a table with a grid*

Summing up

In themselves, each of these packages is an excellent wordprocessor for first-time users or for people looking to upgrade from 1st Word Plus, whether at home or in school. In practice, the major differences in functionality between them are that Wordz has table-creation and mailmerge facilities, both of which have been excised from StartWrite. In addition, Wordz has a draft printing option which speeds up work on text-only documents.

However, neither application stands in isolation – StartWrite can be upgraded to EasiWriter or TechWriter for these and other functions. On the other hand, once Wordz has been joined by the rest of the Z series your choice may be influenced by the need to exchange data between them. Over to you...

STATISTICS FIRST *IS NOW MULTI-TASKING!*

Our **new enhanced** products

1st and 1stJR

Have been released

For full information contact:

Serious Statistical Software

Lynwood, Benty Heath Lane, Willaston,
South Wirral L64 1SD

Tel: 051 327 4268

Yes, only £5! DoggySoft

Only £5! A mere £5! v3.04

The Hacker

The Hacker was the first cheat utility for the Archimedes, and is the best - its features are far more numerous and flexible then any other similar program, and it is extremely easy to learn and use due to its mouse-driven WIMP system, based on the RISC OS Desktop. It also has a Desktop tool to allow you create your own stand-alone cheats. The Hacker is now compatible with all Acorn 32-bit computers and costs a mere £5.

DISS **Diss** v1.10

The definitive Desktop disassembler Only £10!

A must for all ARM coders - this easy-to-use WIMP disassembler includes flexible searches, useful labels, multiple files, easy editing (even mnemonics), lists, and thousands of other features not to be found anywhere else.

Diss costs a measly £10 - cheques payable to Ben Dooks

DoggySoft, 7 Blackhorse Crescent, Amersham, Bucks., HP6 6HP.

Cheques payable to 'Andrew Clover' or to 'Ben Dooks' for Diss.

Or... send just 50p, or a blank disc, for a PD demo version of The Hacker (v3.04), and of Diss (v1.10).

Someone else is stunned by

TableMate

- Simply the easiest way to create tables for Impression II & Junior (Editable inside Impression) or as Draw Files.
- Great for Ovation, Pipedream etc. too!
- Quick and easy to use - special editing features save you hours of effort!
- Phone or SSAE for more details.
- Price rise frozen - £21 until 1st August!

"I found [TableMate] very easy & intuitive to use"
"a quick way of making up tables"-Archive, May '93

Dalriada Data Technology, 145 Albion Street, KENILWORTH
Warwickshire, CV8 2FY. Phone: (0926) 53901

SKYFALL PD

850 DISCS OF PUBLIC DOMAIN

ALL AVAILABLE TO YOU

The Best Software
The Biggest Choice

Please send £1 for our Public Domain Summer Catalogue & Demo Disc to:
Skyfall, PO Box 2220
Birmingham, B43 5RZ

TT Turing Tools

149 Campbell Rd, Cowley, Oxford OX4 3NX, UK
Tel (0865) 775059

IronMask File Security

V1.2 Personal Edn. £49.00 inc.

Password-controlled access to sensitive files and directories. Protected files are completely inaccessible to normal filesystem operations.

V2.0 Multi-User Edn. £65.00 inc.

All the capability of V1.2, plus: ❑ Up to 64 private IronMask user-IDs give control of IronMask usage in schools, business, etc., e.g. staff or management only. ❑ Time-out feature obstructs opportunistic entry. ❑ Passwords can default to user-ID for fuss-free use. ❑ Superusers can write-protect public directories.

Prices quoted for 1 computer. No VAT. British Isles postage included. Overseas add £3.00. ☎ for educational and site prices, further information or factsheets.

Don't go to the ends of the earth for Good PD Software

Instead go to Arch Angel

·The PD Library·

with more than 650 discs

PD Software that zaps the rest for £1.25 per disc

B03 - PowerBase - A fully functioned database
L31 - Gyrinus 2 - The Power Game that tests your skill

Send £1 for the unique Pick n' Mix Catalogue & Sample Disc
(you won't bin this disc)

Dep AC7, Arch Angel, PO Box 41, Exeter, EX4 3EN - Tel 0392 422759

Desktop Innovations

Stonehaven, Hook Crescent, Ampfield, Romsey, Hampshire. SO51 9DE.

Network Management Utility

!EcoSuite is a fully RISC OS compliant application. Its facilities include :- Remote Configuration, Capture Screens, Access Remote Filing Systems, Examine Passwords, Remote Set Time, Control & Reset Stations, Station Info & MORE. Most operations can be broadcast to multiple stations. An indispensable tool for a Net Manager

Send £2 for a demo of !EcoSuite and a catalogue. **£24inc.**

RISC OS Cambridge Pascal Programmers Development Library

!Include consists of a suite of library routines for inclusion in your own Cambridge PASCAL programs. As well as replacing the basic WIMP library supplied with the Compiler, they provide a host of extra facilities. (eg. WIMP, Sprites, Memory Manipulation/Allocation, ADFS, Files (BPUT, BGET etc. equivs.), Fonts, Strings, File Type Conversion AND MORE !)

Send £2 for a demo of !Include and a catalogue. **£19inc.**

Please make cheques payable to Desktop Innovations.

Please make cheques payable to :

THE PATASTREAM

34 Norbreck Close, Great Sankey, Warrington, Cheshire, WA5 2SX

Send £1.00 for a copy of our latest catalogue featuring many Special Offers OR send £1.50 for a copy of our catalogue and an extra disc with around 1600k of compressed PD software.

Buy any disc below for £1 each , or six discs for £5.

GG-023 - Son of Gyrinus - A superb PD game of commercial quality.
GG-034 - Invaders (2mb) - Fed up of predictable shoot'em ups? This is the answer!
DD-031 - Armageddon MegaDemo - A most professional looking demo!
DD-034 - ArcAngels MegaDemo - A great demo from the authors of Aldebarren.
UG-002 - Translator v7.12 - Converts all major graphics from other computers to the Arc.
UG-007 - PVRay - THE Public Domain raytracer!
UT-005 - MiniHound - A 30,000 word Theasaurus - why pay any more?
UR-001 - The new version of Draw+ (2.2) plus numerous other Draw utilities.
UP-003 - A disc containing various utilities for programmers. including Interface module.
MA-001 - LunchTime Issue 3 - Highly recommended satirical magazine.
SA-010 - A disc full of high quality sound trackers (NOT ported over from the Amiga!)
CH-008 - The latest version of !Fractal - The main fractal generating program from AFG.
SU-001 - The disc of 'essential' Public Domain Utilities incl. STracker v4.08 & Guardian

Normal Discs - £1.00, Pic'n'Mix Discs - £1.50

Programs for all generations

Abandoning the suntan, Teri Paul sits down to view the waves of brand new PD

DESPITE Acorn's announcement that they will no longer be producing the Master 128, there are still a lot of machines out there and, to be honest, for some applications the 32-bit machines cannot compete.

So let's take a look at some of the great and the good for the BBC B and Master – as well as the entertaining.

As this is the silly season let's start with Joshua Westbury's **Silly Games** which are available through JJF PD. There is a very impressive title sequence before you are given the choice of Wallaby Wrestling from the WWF – the Wallaby Wrestling Federation – the Space Detective, Breakdown or Supersonic Snail Racing. Silly Games are not really shareware but Joshua asks you to send £10 to Tadworth Court Children's Hospital if you enjoy them.

The first and last are humorous in concept but the graphics and gameplay leave a bit to be desired. I did enjoy Space Detective which is a must for any Cluedo freak. The computer generates different scenarios from theft to murder and you must find and question 10 suspects and arrest the guilty party and possible accomplices.

Remember though that villains tell fibs. Breakdown is Breakout and is a pleasant way to spend a few hours.

Next to the starting blocks are Mad Rabbit PD who have been going through something of a reorganisation in the past few months. The majority of disks have been merged to create full double-sided disks with a menu, ReadMe files and an 80-column textfile reader for those with machines not supporting *TYPE. In future all disks will be standardised on DFS 80-track double-sided double-density for £1.25.

Watch this space for news of how their negotiations are going for a Spectrum Emulator and a shareware ANSI Bulletin Board host software. In the meantime Mad Rabbit have a series of other programs to whet your appetite.

Treats for cheats

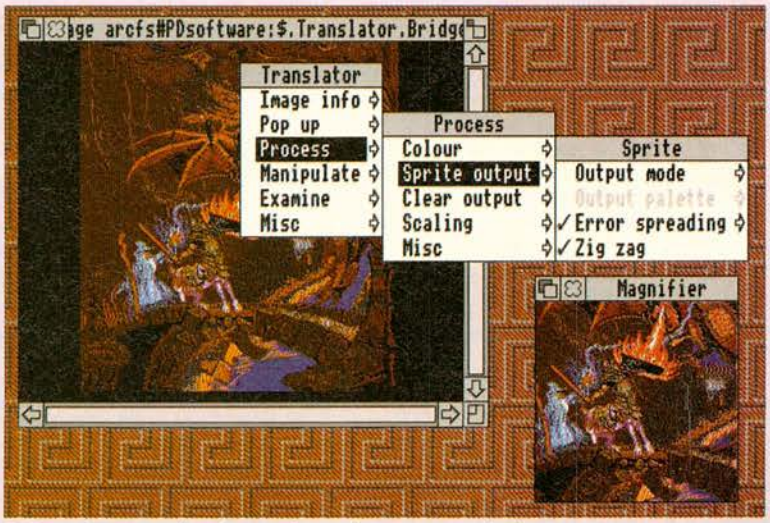
Bolton-based 8-bit Software combine articles and comment with programming help and a series of programs from games to applications. Some gems from Issue 26 include a **Game Cheats Database** which is a must for any 8- ➤

32-bit power

I've been inundated with some excellent music and graphics this month. Most of the artwork seems to have come via the PC and Amiga thanks to Translator and I'll try and squeeze some of the best on to the 32-bit subscription disk.

A plea came into the offices from Schools Direct (0604 770099) who specialise in supplying educational shareware and PD programs to schools. Up to now they have been concentrating on the PC and compatibles market, but are planning to extend this to the Acorn 32-bit range. If you think you have anything of suitable content and quality – give them a ring.

● *Using Translator you can access some impressive artwork designed on other machines*



● *Translator can then be used to enhance or manipulate the image for use in a host of possible applications*

➤

bit arcade game enthusiast. It has hints, cheats and pokes to give new life to classics and current games.

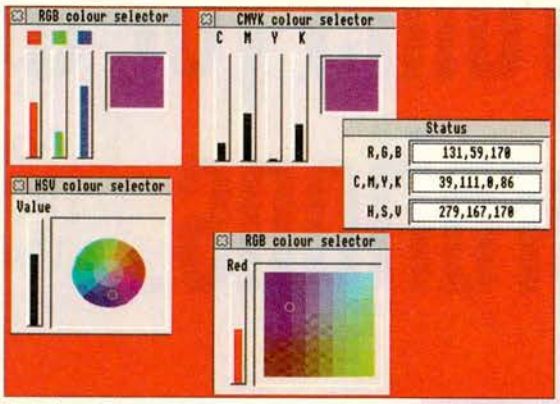
Two PD offerings which may interest you are **Star Commander** and **Battleships**. The former requires you to push the buttons but you don't have to worry about the flying or fighting – just sit back and let your computer tell you the result. Unusual and nicely written.

Battleships is that old paper and pen classic and it works well as the computer is your opponent. The rules and gameplay are exactly the same as the non-computer variety keeping the frustration and requiring your honesty. Again its presentation is neat and well implemented.

If you're short of something humorous or witty to say, take a look at **Joker** by Steven Flintham. Okay some of the jokes are older than he is and others belong in Christmas crackers, but some are true classics and they certainly made me laugh. A particular useful set of programs can be found on this disk too: **Programs for f Keys**.

Help plus
Full screen mode, Click on the middle button (MENU) over the film, Use the mouse and select Full screen, the application will now change to the Full screen mode to suit the file.
Full screen mode keys, Click on the middle button (MENU) over the film, Use the mouse and follow the arrow into Full screen, the application wil
now show
Help plus
h can be used in full screen mode.
Info
Acorn
Longman
4mation
Argus
Ace
Ace
Projector

● *Help yourself by accessing other people's hints with HelpPlus*



● *Colour information at a glance with ColourMap*

Most serious programmers will not find anything special here. The dabbler and enthusiast, will find the ability – and code – to enable you to program your function keys to:

- List programs in Mode 7 and stop the screen from scrolling
- Add your name to each screen
- Merge a Basic program on to the end of one in memory and renumber it
- Print a catalogue of a disk in small print for a label – or two
- Autosave with a new number
- Let you know the tab value to centre text as well as other programs to alter graphics and add keyboard shortcuts to Interword.

Giving you more help

If you'd like to compile those useful RISC OS hints and tips for applications which are not not always found in the manual **HelpPlus** may be for you.

This is a multiple help extension program and comes courtesy of Craig Beech who is develop- ing it first in the PD but plans to release a commercial version for £19.95 by the end of the year.

The program is pretty much self explanatory and will be a nice addition in schools or for newcomers to the 32-bit machines. It loads on to the iconbar and two windows appear on the Desktop, one giving instructions and the other showing the tools at your disposal.

By clicking Menu over the main window you can access various companies and their products for which you may need a little extra advice. At the moment Acorn, Longman, 4Mation, Argus and Ace are supported with hints for those using First Word Plus, Draw, Edit, Paint, VKiller, Pendown, Vector, Logo and Projector.

The program still needs work, but the idea is sound and I look forward to later versions. On the same disk from Craig came **ColourMap**. This ingenious utility was written by Henrik Bjerregaard Pedersen and demonstrates three of the most commonly used colour schemes: RGB, CMYK and HSV.

For anyone involved in high quality colour output – not easy even if you've got ArtWorks – ColourMap may help. The program is fully multitasking and is controlled via the iconbar.

The RGB or CMYK selector shows the relevant colour slider bars, a box showing the results of the combination and an additional window displaying the values numerically in RGB, CMYK and HSV.

The HSV selector gives you a slider bar and a colour wheel while a second RGB selector allows you to control the Red slider bar and a box of colours.

As with all the controls, alter one slider, or click on the colour wheel or colour box and all the other windows will respond with their solution for that colour shade.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 1 Oakwood Drive, Heaton, Bolton BL1 5EE.
BBC PD,18 Carlton Close, Blackrod, Bolton BL6 5DL.
Elk PD, 5 Edward Street, Clifton, Brighouse, Yorkshire HG6 1QR.
Frisky Clams, 37 Cassiobury Drive, Watford, Herts WD1 3AA.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Mad Rabbit Public Domain, PO Box 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE.
Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF6 8EE.

32-BIT HOUSES

3PD, 66E Picardy Road, Belvedere, Kent DA17 5QN.
Abyss Software, 35 Grantley Crescent, Kingswinford, Valley Fields, West Mids DY6 9EH.
Alpine PD, PO Box 25, Craigavon, BT63 5UT.
APDL, 39 Knighton Park Road, Sydenham, London SE26 5RN.
Amicorn PD, 11 The Square, Alveston, Bristol BS12 2PE.
Arcaynia, PO BOX 1927, Sutton Coldfield B74 3YZ.
ArchAngel, 9 Chancel Court, Chancel Lane, Pinhoe, Exeter EX4 8QE.
ARMistic, 136 Wellesley Road, Ilford, Essex IG1 4LJ.
Busy Bee Computers, PO Box 25, Ormskirk, Lancashire L39 3QR.
Craig Beech PD, 52 Margeholes, Carpenders Park, Watford, Herts WD1 5AR.
Datafile PD, 71 Anson Road, Locking, Weston-super-Mare, Avon BS24 7DQ.
DataStream, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Demon DPD, 3 Marshall Close, Fishtoft, Boston, Lincs PE21 0RX.
Diamond PD, 86 Meadowbank, Moor Lane, Holway, Holywell, Clwyd CH8 7EF.
Different Ideas Music, 48 Merthyr Road, Dallington, Northants NN5 7BS.
Digital Illusions, 20 College Road, Wembley, Middlesex HA9 8RL.
Digital Phenomena, 104 Manners Road, Southsea, Hants PO4 0BG.
DigiTech PD, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
DoggySoft, 7 Blackhorse Crescent, Amersham, Bucks HP6 6HP.
Equinox PD, 27 Station Road, Earls Barton, Northampton NN6 0NT.
Five Star Marketing, 18 Woburn Close, Bushey, Herts WD2 3XA.
GemPD, 15 Partridge Down, Oliver's Battery, Winchester, Hants SO22 4HL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
I-APL, 11 Auburn Road, Redland, Bristol BS6 6LS.
Kingsway Computer Services, 72 Glencoe Road, Sheffield S2 2SR.
Low Cost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Matt Browne PD, 5 Inglefield, Pottres Bar, Herts EN6 1HD.
Moonlight Graphics – Shareware, PO Box 3569, Cape Town 8000, South Africa.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Ozone-Friendly PD, 180 Cumnor Hill, Oxford OX2 9PJ.
Power to the Programmers, 1st Floor, 23 Cooper Street, Nelson, Lancashire BB9 7XW.
RML PD, 24 Penryn Close, Norwich NR4 7LY.
Skyfall, PO Box 2220, Birmingham B43 5R2.
Spidersoft PD, 218 Saville Park Road, Halifax, West Yorkshire HX1 2XS.
Westbourn Services, Westbourne House, 34 Bradley Street, Wooton-under-Edge GL12 6AR.

200 FONTS ONLY £20

Supplied with Bold & Italic Styles, comes on 16 discs.

Fonts Pack 1

Acorn	MegaType	Park Avenue	Jotter	Jayne
STENCIL	Schwarz	Brush Script	Ladybird	George
SPLODGE	THEATRE	Friendly	Milton Keynes	Columbia
TECH	Cooper Black	Chicken	Lazy	ALGERIAN
BALLOON	Gangster Bit	Classic	Koch	Dubiel
Raven	Buckingham	Bolt	Swizz	SOLID
STOP	Palatino	Citric	Trio	Σψμβολ
Cybernoid	Oxford	Orange	Baskerville	
Hardcase	Old English	Amber	*Italic*	
YOUNG	Reiner	Garden	Select	XRMMk II

Fonts Pack 2

POST CRYPT	TERMINATOR	Andromeda	Informal	BUBBLE
Цириллиц	STRONGMAN	Architect	El Garrett	China Town
CAVEMAN	Gordon	Chasline	Alison Square	Borzoi
DEUSEX	ESPHERES	Chinese	EDDA	TOY
Future	METRO LINER	Charlie	Black	Kathlita
LED Style	SNYDER	Conaith	Caligula	Jumbaja
PONCHO	Fos Script	Heidelberg	Jackson	Windsor
Ricksaw	FLINTSTONE	Thalia	Laser	Video
New	Psychadelic	Murder	Daytona	Phaedrus
	Sweet	Oregon		Graphic

Fonts Pack 3

MULTICOLOR	DRAGON	Good Life	Faktos	cursegeon
HIGH SCHOOL	King William	Juliet	Hot Shots	Duncan
CLUMSY		annie	ICED UP	Micro
RED SQUARE	JUNK FUNK	Broken	american	LICHTNER
ZALESKI	Koshgarian	Camelot	Apollo	Rockman
GRUMAN	Romeodn	Lauren	Cairo	РУССКИЙ
SIMPSONS	RACKHAM	My Works	TRIBE	WEISS
Science	QUIZ SHOW	SPURS	POINT	Hang
Mushy	KRAMER	Mardi	BRAIN	Oak Wood
KICK OFF	Upper West	Notepad	USA	TAX

Fonts Pack 4

JEEVES & WOOSTER	PURE METAL	Gexo	ANTIQUE	Gessele
BLACK ADDER II	NEW YORK	Birthday	DIGIT CAD	EDITION
BONES	Medusa	BORG	Royal Crown	Rain
Vampires	METROPOLIA	STEMS		LEE
Chalk	SALTER	KING	Creedmore	CARADOS
ELF JAZZ	WATER	LOMBARDIC	Dickens	Lilith
FIRE	Chopin	Paganina	Fundage	MANIA
GREEN	BENNY	First Words	Nixon	MAZAMA
GALLEDIS	FOXTROT	Muncho	Anquillia	Beatville
rabbit ears	Flemish	Madrid2	DINER	SPARK

SKYFALL PD

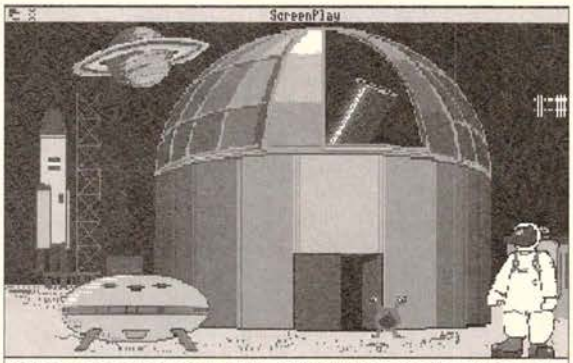
The Font Packs on this advert all have 50 fonts in them, and are supplied on 4 discs. You can purchase all the packs for only £20, or at £6 individually. For details of our extensive software range, which includes Clip Art, please send £1 for a demo disc and printed catalogue.

Telephone : 021 358 7078
PO Box 2220, Birmingham, B43 5RZ.

VISA Access

widgit Software

102 Radford Road
Leamington Spa
CV311LF.
Tel 0926 885303
Fax 0926 885293



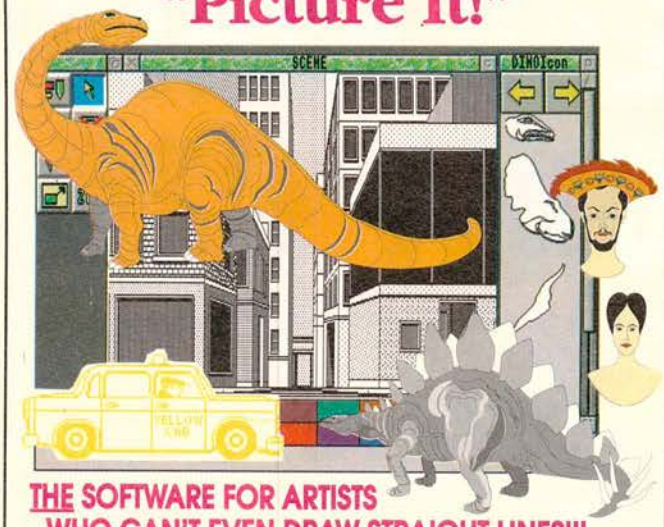
Olga was a bit nervous. Aliens were quite rare and she had never met any before.

The Archimedes range of **ScreenPlay** and **GridIT** has been completed by **Choices (winner of Special Needs Software Award Oct 92).** This pack has a wide range of applications, visual work, sorting and sequencing, simple communication using pictures. In fact almost any exercise can be designed where the student must make one or more choices from a displayed set. A wealth of example material is provided.

ScreenPlay - shown above - can be used by children to create their own animated stories, or teachers and parents can make the stories for children to respond to - see review Acorn Computing April 93.

Write or phone for **full catalogue.**

"Picture It!"



THE SOFTWARE FOR ARTISTS WHO CAN'T EVEN DRAW STRAIGHT LINES!!!

(even with the gridlock on!)

Create superb, highly effective scenes with this powerful, easy-to-use picture-building software – and animate them very easily and quickly.
A wide variety of National Curriculum related topics of !Draw objects are available, including Buildings, Map-making, Ships, Transport, Solar, Mini-Beasts and Dinosaurs.

Prices (excluding VAT + P&P):

Master pack (master program, animation disk and Identikit faces picture library)	£29.95
Site Licence	£20.00
Topic Disks	each £8.95

All software available on 28 day approval.

Contact us for more information and a FREE Demo disk.

APPIAN WAY SOFTWARE LTD.
Old Co-operative Buildings, Langley Park, Durham DH7 9XE
Tel. & Fax (091) 373 1389

VISA MasterCard EUROCARD

SPECIAL OFFERS

Fast Arm 3 Upgrade 35Mhz £219
Fast Arm 3 + Risc OS 3 35Mhz £254
Arm 3 25 Mhz to 35Mhz Upgrade £171

A5000 2Mb Ram upgrade £79

SCSI Systems

Using High-Quality Conner, Quantum or Maxtor drives.
All systems are CDFS ready and are Acorn compatible.

Internal Systems (300/400/5000series)
85Mb Standard System - £259
Pro System - £289
120Mb Standard System - £299
Pro System - £339
213Mb Standard System - £399
Pro System - £439

Original A3000 Solutions -
Hard box (including fan, power supply, interface card, and hard drive) - plugs into external expansion socket. Easy to install and portable.
85mb £329
120mb £379

A3000* + A4000 Solutions -
Our cards are available in internal versions for these machines - Simply add £75 to the above prices for an external drive case and power supply. The standard system is also available with a user port, Midi interface and sound sampler - add £99 to the above prices.

CD-ROM, Magneto-Optical, Tapestreamers, Floptical etc also available. Please contact us for details.

IDE Systems

Internal (A3000* and A4000 series)
Using 2.5" Conner or Maxtor drives.
60Mb £299
80Mb £369
120Mb £479

A5000 Extra IDE Drive

Includes all necessary cables.
Using High Quality Conner, Quantum or Maxtor drives
120Mb £239
170Mb £259
250Mb £339

* includes A3000/A3010/A3020

All prices exclude VAT and delivery

Add £9 delivery

This is obviously only a small selection of all the products we sell. For a full list or the price of a particular product please contact us.

QD COMPUTERS
30-33 SOUTH ST.
CHICHESTER
W.SUSSEX PO19 1EL
TEL: (0243) 531194
FAX: (0243) 531196

Many apologies to those customers who found us not as easy to contact in our new office as anticipated! This was due to a number of factors, not least of which being that the new phones we ordered didn't arrive until well after last month's advert appeared! Although we are still not quite through our teething problems things should be getting better. In the meantime–please don't hesitate to leave us a message, we **will** get back to you, in the evening if necessary. You may pay by **cheque, Access, Visa, Mastercard** and **Delta**. Call us any hour, any day to place your order on (0273) 208074 or fax us on (0273) 738258.
To speak to a real human call us between 9.30am and 4.30pm Mon–Wed

Art/Graphics

Artworks	145.00
Chameleon 2	42.00
GraphBox Pro	115.00
Illusionist	85.00
Imagery	82.25
Image Outliner	90.00
Revelation 2	128.75
smArt	54.00
smArt Filer	38.00
Vector	89.00

Books

First Impressions	31.00
Good Impressions	29.00

Communications

ArcComm 2	55.00
ArcFax	22.00
ArcTerm 7	70.00

Databases

Flexifile	133.00
Squirrel	150.00

DTP/WP

Impression 2	145.00
Impression Junior	81.00
Pendown Outline Fonts	19.95

Education

Fun School 3 (-5, 5-7, 7+)	21.00
Fun School 4 (-5, 5-7, 7+)	21.00

Hypermedia

Genesis 2	130.00
Magpie	56.00

Music

Notate	59.00
Rhapsody 2	55.00
Score Draw	55.00
MIDI/Sampler (Econet)	75.00

Peripherals

Vision Colour Dig. (Int)	89.50
HiVision Colour Dig. (Int)	148.00
ScanLight 256	220.00
Scanlight Professional	640.00
with SCSI interface	790.00

Printers

Canon BJ-10ex	205.00
with CC Turbo Driver	255.00
Epson LQ570	290.00
LaserDirect HiRes 4	1050.00

Spreadsheets

Eureka!	128.75
Pipedream 4	199.00

Utilities

Arcticulate	19.00
Compression	48.00

Consumables

BJ-10 Ink Cartridge	20.50
Box 10 3½" TDK DS/DD	8.90
Box 10 3½" TDK DS/HD	12.50

Games

2067BC	18.50
Aggressor	17.80
Aldebaran	28.95
Battle Chess	25.25
Black Angel	29.95
Bobby Blockhead	17.50
Break 147 & Superpool	29.95
Cartoon Line, Part 1	19.50
Champions	25.25
Chuck Rock	21.75
Cyber Chess	43.00
Cyborg	22.50
EGO: Repton 4	21.25
Fervour	21.75
Fred	21.75
Galactic Dan	21.50
Gods	21.75
Gribbly's Day Out	21.95
Grievous Bodily 'Arm	20.75
Guile	25.20
Hero Quest	25.25
James Pond	21.75
Krisalis Collection	25.25
Lemmings	21.75
Oh No! More Lemmings	16.95
Legend' Lost Temple	19.50
Lotus Turbo Ch. 2	21.75
Man. Untited Europe	21.75
Nebulus	21.75
Paradroid 2000	21.75
Pesky Muskrats	21.95
Populous	21.75
Provocator	16.95
Quest for Gold	21.75
Raw Power	24.50
Saloon Cars Deluxe	29.95
Sim City	29.50
Spheres of Chaos	21.25
SWIV	21.75
Technodream	21.25
Top Banana	21.25
X-Fire	20.75

All prices include VAT, Postage and Packing. PO Cash on Delivery: add £3.50 for orders up to £350. E&OE

SENLAC

Computing Limited
(AC0793)
PO Box 304
BRIGHTON BN2 2TT
Tel: (0273) 208074
Fax: (0273) 738258

★ ★ ★ Star Bargains ★ ★ ★

Fax Modem Package 1 ..... 795.00
ArcTerm, ArcFax and a top of the line US Robotics Courier v32bis, HST dual standard fax modem.

Fax Modem Package 2 ..... 520.00
As package 1 but with a non HST v32bis fax Courier.

Panasonic KX-P1124i 230.00
Excellent quality 24 dot matrix printer.

Epson Stylus 800 Package 355.00
One of the best ink jets around and cheap to run. Complete with the Ace Pro-Driver (RO2) or Std Driver (RO3 - deduct £20) and cable.

Epson 5200 Laser Package 750.00
Superb quality and value laser with Ace drivers and cable as above.

★ ★ ★ Only While Stocks Last ★ ★ ★

Digitised designs

Steve Bruntlett shows how you can use additional hardware to complement your talents

THIS is the first of two articles dealing with video digitisers in art and design. The work for this part was produced by pupils on the City and Guilds Art and Design course at Honley High School, Huddersfield in West Yorkshire.

If you're not familiar with a video digitiser, think of it as an electronic box of tricks connecting a video source and computer. The source can be a camcorder, still video camera, video player or video tuner – allowing you to take live signals and convert them into images displayed on a computer. More importantly for artists and designers, the images can be dropped into graphics, paint, drawing or animation programs.

Many excellent models are available and an inexpensive digitiser such as a basic mono one will cost less than £50. As long as you save the digitised work in sprite format you should be able to load it into most art, painting and drawing packages. If you haven't got a digitiser, PD disks contain portraits of the rich and famous and grabs from TV programmes.

Once you've installed the digitiser, connected it to the video source and run the software you should end up with some kind of image on screen. If you are working with a standard monitor you'll be in Mode 12 (16 colours) or Mode 15 (256 colours).

With a high resolution monitor you may want to make the most of the hi-res Modes 20/21 or preferably 27/28. You'll have to decide whether to have a wide range of fixed colours in a 256 colour mode or work with the more flexible but restricted 16 colour one.

File formats

Most digitisers let you save pictures in a raw picture format which can be dropped into the digitiser for processing, as well as in sprite mode which a paint program will understand and display. If you have enough disk space save both so you can refer to the original.

This raises two points: If you save a hi-res Mode 28 original on disk but produce from that a partial screen sprite in Mode 12 to work from in a paint package and get rid of the original, you won't be able to go back to it to produce different versions as you will have lost most of the original picture information.

Also, in the case of the images reproduced here, no software processing of the original images was done with the digitiser software – it was all accomplished using the picture processing facilities in the paint program.

● *One of the original digitised screen portraits*

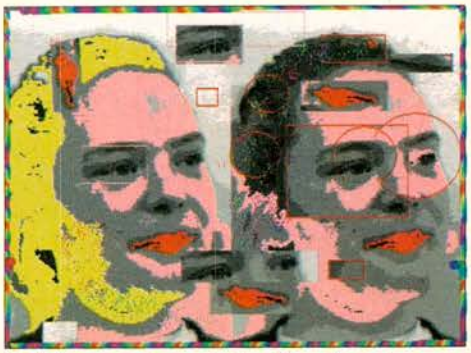
Most newer digitisers have sophisticated image processing routines which could be used before dropping the images into a paint package: Edge detection, image smoothing, mode changing, gamma correction, contrast and so on.

Try out these facilities on your images but in this tutorial I'm just going to take straight images and see what can be done with them in a 256 colour paint package.

The brief on the digitising project was to produce a self-portrait which expressed something of an individual personality using lateral reflection, cutting and pasting, ➤

● *A series of digitised portraits in six stages of simplifications and tone reversal*

● *A recoloured portrait with a sprite filled background*



● *A three quarter portrait using cut and paste, recolouring and over painting*

edge-detection, post production painting or false colouring.

If you're still unclear about *edge detection* think of it as a line around a solid area of colour forming a boundary and quite an interesting graphic effect in its own right. Most packages feature a routine which replaces the original image with an outline. Newer packages offer this in addition to the original image combining the two in differing degrees of sensitivity.

The original portraits were produced in 16 grey shades and simplified to eight or four shades to make colouring easier to control and make the image a lot simpler and more graphic.

If you have a 256 colour screen it's straightforward to produce a 16 colour grey scale image using the mono global colour set in Pro-Artisan or the Colour Shift dialogue box in Revelation 2 to take out all the colour and reduce the number of steps in the picture to 8 or 16.

Once you have a basic eight or four shade portrait it will look more posterised – like a screenprint – as you proceed so you have to start making decisions about how to work on the image further. You can keep reducing the shades to two to produce a very stark image but one which may also look very striking when edge detected. You can also reverse images to produce interesting negative effects or use the effect on part of the picture.

Portraits or sections of portraits can be cut out, reduced in size and used as a background texture. But this can look as though you're just using the effect for the sake of it.

Collage effects

It's much more interesting to start cutting sections from the portrait and pasting them elsewhere after having enlarged, reduced or rotated them. This can give a very interesting photographic collage effect especially if combined with overpainting.

● *The culmination of many processes used in the portraiture project*

● *Two distinct portraits can be obtained from a single original obtained when you experiment with facial symmetry*

Overpainting is straightforward as all you need to do is use the symmetrical image as the basis of the painting and just add to what's there. Changing colour is also easy. If you have up to 16 shades you can use the Global Magic Brush or Colour Set facilities in Pro-Artisan or mix a particular palette of colours in Revelation ImagePro and apply it to the whole screen.

You can also use *fill all* type features to fill in all the occurrences of a particular colour in one go no matter how detailed the image is. There are other effects and it's generally a matter of working with your paint package and finding put what the manual offers in the way of creative working techniques.

You can often grab a palette from one image and apply it to another. So if you have a carefully worked out palette – especially on a Mode 16 picture where the individual colours have all been carefully adjusted – you can apply it in turn to each new image should you want to maintain a consistent approach to colour schemes.

There are numerous ways to achieve similar effects so try new ways of doing things from time to time. Don't be limited by what you think a package can do. Try things you're not supposed to be able to do and see what happens but don't forget to save your picture first.

One of the most interesting areas to work on is facial symmetry. You cut out exactly half of the face, flip and paste it on to the other half producing a perfectly symmetrical image. Results differ but variations fall into two types: One where the symmetrical portrait was very little different from the pupil's face and you couldn't really tell it apart from the original digitised image.

Facial symmetry

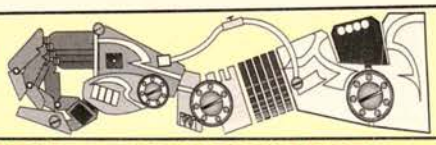
The other was where the symmetrical image produced two new faces. This can be put down to not cutting the image down the centre or the fact that the original digitised image was lop-sided. Even if care is taken people have very definite sides to their faces.

One pupil got to grips with this way of working using symmetry, edge detection, false colouring and his original image to produce an absolute masterpiece. It was created from a fairly crude original image using a standard paint package but with a degree of creativity, imagination and thought he produced the best piece by far.

● *Next month we'll continue with this look at the use and manipulation of digitised images.*

ARM_TECH (UK) LTD

Opening Hours
MON-SAT 10am-6pm JULY



86 Meadowbank, Moor Lane, Holway
Holywell, Clwyd. CH8 7EF
Tel/Fax :- 0352 715840

AUTHORISED ACORN DEALER

Access VISA

Hard Discs

	IDE	SCSI
80/85 Mb Int	£179	£225
120 Mb Int	£225	£270
170 Mb Int	£260	£299
250/225 Mb Int	£399	£429
510/543 Mb Int	£789	£799
A3010 80meg Wih Card (Int)		£399
A3000 80meg Wih Card (Int)		£389
FUJI 128meg Optical Drive Int		£849
Toshiba CDROM Drive D/S + M/S		£499

For external units please add £89

Syquest 44meg Removable Cased	£429
Syquest 84meg Removable Cased	£539
Syquest Cartridge 44/84meg	£69/£99
IDE controller 300/400/A3000	£89
Morley 16bit Scsi Interface	£149
A3000 (Morley) Scsi Interface	£169
Morley Scsi (Cached)	£199
QD Scsi 16bit I/F 300/400/5000	£139
V-Twist A3000 Turbo Interface(Int)	£159
External Hard Drive case including fan & power supply	£89

MONITORS

Acorn Colour AKF30/40	£199
Acorn MuliScan AKF18	£299
Microvitec Multi-Sync	£399
Taxan 795A	£489

CC LASER DIRECT

Laser Direct HiRes4 (LBP-4)	£999
Laser Direct HiRes8 (LBP-8)	£1319
Canon LB4 Toner Cartridge	£65
Canon LB8 Toner Cartridge	£79

HARDWARE UPGRADES

5.25" Ext. floppy disc I/F A400	£39
5.25" Ext. floppy disc I/F A3000	£39
ARM 3 Upgrade	£179
Canon BJ10 Turbo Driver (CC)	£45
Dongle Dangle	£7
Dust cover (Keybd + Monitor)	£12
FaxPack (CC)	£299
Hawk V9 Video Digitiser	£199
I/O Expansion Card	£79
Joystick I/F	£34
ArmStick JoyStick Interface	£28
Joymaster (A3010 Only)	£24
Keyboard Extension cable	£8
Midi Upgrade to I/O Exp. Card	£27
Midi Expansion Card	£69
Mouse Extender	£8
Micro Mouse (Clares)	£31
Scanlight (A4) (CC)	£299
Scanlight Junior 256 (CC)	£199
Speed King Joystick	£11
Quickjoy Joystick	£9
Risc-OS 3.10 ROMS	£42
Risc-OS 3 Carrier Board 300/400	£24
Serial Upgrade A3000	£19
User & Midi Podule A3000	£49
Vision Digitizer Mono Int £59 Ext	£79
Vision Digitizer Colour Int	£79/Ext £89

BOOKS

Acorn Education Directory	£4.95
Archi Assembly Language	£14.95
Archi First Steps	£9.95
Archie Game Makers Manual	£14.95
Archi Operating System	£14.95
C: A Dabhand Guide	£14.95
Above books have accompanying discs add £7	
Acorn DTP Adv User Guide	£14.95
Basic V: A Dabhand Guide	£9.95
BBC Basic Guide (NEW 3.10)	£19.95
Budget DTP	£12.95
Game Makers Manual	£14.95
Guide To Wimp Programming	£14.95
RISC-OS 3 PRM's	£99
RISCOS Style Guide	£10
Acorn DTP Manual (Acorn)	£10
AASM Manual (Acorn)	£25
ANSI C v4 Manual (Acorn)	£25
DDE Manual (Acorn)	£25
A540/A5000 Tech Ref Manual	£65
A3000 Technical Ref Manual	£30
First Impressions (With Discs)	£32
Good Impressions (With Discs)	£31

PRINTERS

Citizen Swift 240 Colour	£259
CANON BJ-10SX / Turbo	£219/£260
Canon BJ-10 Ink Cartridge	£17
SheetFeeder for BJ-10E/EX/SX	£57
Canon BJ-200	£299
Canon BJ-300 Bubble Jet	£339
Canon BJ-300 Ink Cartridge	£14
SheetFeeder For BJ-300	£99
Canon BJ-330 Bubble Jet	£399
HP DeskJet 500 / 500Col	£319/£419
HP DeskJet 550 Colour	£499
Refills for BJ10e/10sx (2 per Kit)	£13

RAM UPGRADES

A3000 IFEL up to 2meg, this board can be upgraded to 4meg. £55

A3000 4meg. £129

A3010 Up To 2/4meg £39/£129

A3010 4meg (Turbo, speed up your machine by 40% approx) £139

A3020 2 To 4meg £79

A5000 2meg To 4meg £89

A540 4Mb RAM. £399

APPLICATIONS

Acorn Advance	£99
Armadeus (Clares)	£59
Art Works (CC) (IN STOCK)	£129
Archivist Pro	£38
ArcLight (Ace)	£41
ArcTerm 7 (Serial Port)	£59
Atelier (Minerva)	£69
Compression (CC)	£36
Desktop C v4 (Acorn)	£199
Drawbender (ICS)	£14
Desktop Thesaurus (RISC)	£19
DeskTools (RiscOs 3 Only)	£15
EasiWord 2 (Minerva)	£55
Easy Writer (Icon Tech)	£159
Equasor (CC)	£39
Euclid 2 (Ace)	£55
Eureka (Longman)	£99
Flexifile Database (Minerva)	£87
Font FX (DataStore)	£10
Fontasy (ICS)	£22
Graphbox Pro (Minerva)	£109
Home/Club Accounts (Minerva)	£35
Hearsay 2 (Beebug)	£74
Image Outliner (Iota)	£89
Impression (CC)	£129
Impression Junior (CC)	£76
Impression Bus Supp (CC)	£49
Investigator v2 (Serial Port)	£22
ISO Pascal Rel.2 (Acorn)	£89
Labeller (Arm_Tech)	£10
Magpie (Logotron)	£49
Mogul (Ace)	£16
Notate (Logotron)	£55
Ovation (Risc)	£109
PC Emulator V 1.8 (Acorn)	£99
Placard (ICS)	£9
Pinpoint (Logotron)	£89
PipeDream 4 (Colton)	£169
Poster (4Mation)	£79
PrimeArt (Minerva)	£75
Pro Artisan (Clares)	£76
Prophet (Apricote)	£149
Render Bender v2 (Clares)	£105
Rhapsody v2 (Clares)	£49
REVELATION v2 (Logotron)	£99
Schema (Clares)	£99
ShapeFX (Data Store)	£9
ShowPage (CC)	£119
SmArt	£55
Snippet (4Mation)	£26
Splice (Ace)	£25
Studio 24+ (EMR)	£149
Tween (Ace)	£35
TypeStudio (Risc)	£39
Vector (4Mation)	£79
Vox Box (Clares)	£49
Worra Cad (Oak)	£84

GAMES

Air Supremacy (Superior)	£17
Aggressor (Atomic)	£18
Alderbarran (Evolution)	£27
Arcade Soccer (4D)	£15
Ballarena (Eterna)	£16
Bambuzle (Arxe)	£17
Battle Chess (Krisalis)	NEW £25
Blitz (Arxe)	£17
Black Angel (4D)	£27
BlowPipe (QD-VT)	£15
Break 147 & Superpool (4D)	£26
Bubble Fair (Eterna)	£17
Cataclysm (4D)	£20
Chess 3D (Micro Power)	£15
Chocks Away 2 (4D)	£22
Chocks Away Extra Miss(4D)	£16
Chocks 2 Compendium (4D)	£30
Chopper Force (4D)	£23
Chuck Rock (Krisalis)	£19
Cyber Chess (4D)	£39
Cyborg (Alpine)	£20
Dreadnaughts	£27
Elite (Hybrid)	£32
Enter the Realm (4D)	£20
E-Type Compendium (4D)	£21
Fervour (Clares)	£19
Fun School 4 Under 5s/ 5-7 / 7+	£21
Gribbly's Day Out (C/A) (NEW)	£20
Grievous Bodily Arm (4D)	£19
Guile (Dream)	£22
Hero Quest (Krisalis)	£24
HoledOut Compendium	£22
Hostages Superior Software	£16
Iron Lord (Cygnus)	£18
Ixion (Software 42)	£21
James Pond	£20
J. Khan Squash (Krisalis)	£19
Karma The Flight Trainer	£24
Krisalis Collection	£25
Kerbang! (Eterna)	£16
Last Ninja (Superior)	£19
Lemmings (Krisalis)	£22
Lemmings EXTRA Levels	£17
Mad Prof Mariarty (Krisalis)	£16
Manchester Utd Europe (Krs)	£20
Micro Maths/English GCSE	ea£22
Micro French/German GCSE	ea£22
10 out of 10 Maths/English	ea£21
10 out of 10 Early Learning 3/7	£21
MIG 29 Super F/crum (Dom)	£33
NEBULAS (Krisalis)	£20
Nevryon (4D)	£19
Paradroid 2000 (C/Age)	£20
Pandora's Box (4D)	£20
Pesky Muskrats (Coin Age)	£19
Populous (Krisalis)	£25
Provocator	£16
QUEST FOR GOLD (Krisalis)	£20
Real McCoy 1/2/3 each (4D)	£24
Saloon Cars Deluxe (4D)	£27
Spheres of Chaos	£20
Scorpius (Arxe)	CALL
Sim City (Krisalis)	£29
Smudge The Spaniel 4/8 years	£22
SWIV (Krisalis)	£20
Thing of Darkness	£24
TechnoDream	£21
Turbo Challange 2 (NEW)	£22
Waterloo (NEW) (Turcon)	£19
Wolf Pack (Software 42)	£17
X-FIRE (4D)	£18
Zool (Gremlin) (NEW)	£22
Zelanites (Micro Power)	£19

IF THE TITLE YOU REQUIRE IS NOT LISTED ABOVE, PLEASE GIVE US A CALL

NEW ACORN RANGE

A5000/HD80 MultiScan Monitor, 2 Meg RAM 80mb HD £1399

A5000-LC Learning Curve System with MultiScan Monitor. Acorn DTP, Ist Word+, Genesis+, PC Emulator, 80mb HD. + Game, etc. £1445

A50004MHD170 170meg HD 4meg RAM Plus MultiScan. £1599

A4000/80 (Home Office System) with ARM 250 Processor, Acorn Colour Monitor, 80meg HD. Software Pack Which Includes EasiWriter 2, Desktop Database. etc. £999

A4000/80 (Home Office System) With MultiScan Monitor. £1049

A4000HD80 System With Acorn Colour Monitor. £949

A4000/HD80 MultiScan. £999

A4 4meg Ram 60meg HD £1699

A4 2meg Floppy System £1399

A3020 Floppy System With Acorn Colour Monitor, ARM250 2Mb RAM, 1.6 Floppy. etc. £749

A3020HD60 With 60Mb HD Acorn Colour Monitor 2meg Ram. £899

ACORN POCKET BOOK £212
With Word Processor & S/Sheet.

FAMILY SOLUTION

A3010FS With ARM250 1Mb RAM 1.6 Floppy 2 Joystick Ports EasiWord Will Connect To TV. £424

A3010LC With ARM250, 2Mb RAM 1.6 Floppy Joystick Ports EasiWord, Genesis Collection, PC Emulator. Acorn Colour Monitor. £680

If Acorn MultiScan Monitor Required Please Add £50 To The Above Prices (Except For Family Solution)

If Acorn JP150InkJet Printer Required Please Add £219 To All Prices.

A3010 ULTIMATE EXPANSION

MultiPodule 2 slot +HD space	£42
MultiPodule+20mHD+PSU 2 slot	£221
MultiPodule+60mHD+PSU 2 slot	£299
20meg HD for MultiPodule	£169
60meg HD for MultiPodule	£245
PSU+Fan+Buffer Kit (A3010)	£30
MicroPodule Scsi (Inc CDFS)	£99
MicroPodule Anologue	£29
MicroPodule Colour Digitizer	£79
MicroPodule HiVision Colour	£129
MicroPodule Midi	£49

Free Software Bundles

When buying systems listed below.

A5000 HD80 or HD170 system FREE JoyStick Interface, !Diary, DeskTools and 3 sets of our ClipArt from SG003 upto SG008.

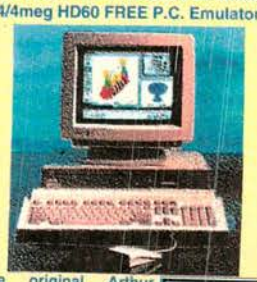
A5000-LC / A4000/80 or Home Office system FREE JoyStick Interface and Diary+ also DeskTools.

A3020 / A3020HD60 FREE JoyStick Interface + Diary+.

A3010LC FREE 3010 Stick Controller and Diary+.

A3010FS FREE 3010 Stick Controller

A4/4meg HD60 FREE P.C. Emulator



The original Arthur operating system came with a diary application; unfortunately Risc-OS lost that very useful little utility. Diary+ offers you all that the original program had and more: you can browse and search through your diary, customise it to remember family anniversaries, and create diaries and print out planners for next year long before they are available in the shops. You can also print out your appointments for any month or year. You can use any Font, mark dates set alarms to remind you that you have an appointment. Diary+ has now been extended even further, you can now save Calendars or A3 planners out as Draw files and from there input any data that you require. Upgrades to existing Diary users is £5 + vat

A3010 Joystick Controller

Problems With your A3010 runnit older games in Joystick mode?. W help Is now at hand with Arm_Tech Stick Controller you will find most the older games will now run on yo machine with no problem. £17+va

Arm Tech Joystick Interface

For A310/A400/A3000/A3020/A4000 Also A5000. No Switches, Interfa Controlled Electronically, Over Modules On The Disc Ready To Us With The Facility To Create Custo Modules, And Also A JoyStick Te Facility.

£28 +VAT

First 150 Ordered Will Be Supplied At The Special Price C £23 +VAT

Desktools, Desktop Toolkit

LOADS OF USEFUL UTILITIES

Trash Can Deletes files and transfer them into its own directory Ready T Trash. File/Find creates a data fil containing the contents of you Discs/HDiscs Fast Find Routine. Va Calculator. Window Stacker. Screen Saver With 10,000 Fractal Screens File/Type/What/Type?. Clock. Floppy To H/Disc Copier + Floppy Blanker (800k Only) + FreeSpace + Save Multiple Files To Disc As 1 File. 10 Page MemoPad. CFS/ADFS Switch. Function Key Info Given With Applications i.e !Edit etc. Application Launcher. Modules Show Rom/Ram + Allocated SWI Number And Name. Workspace Position, Base Number Display All Module Info, SWI's And *Commands +Unplug/Rmkill From Within Windows On Screen. Last Bu Not Least, What A Pair ?. £15 + vat

My World Utilities Discs

These discs are top quality multi-layer drawings for use with the M World program. Ideal for Schools. MWOO1 & MW003 are a useful to for help within the National Curriculum (KS 1/2)

Disc MW001 ANCIENT EGYPT	£12.95
Disc MW002 CHRISTMAS	£9.99
Disc MW003 ANCIENT GREECE	£14.95

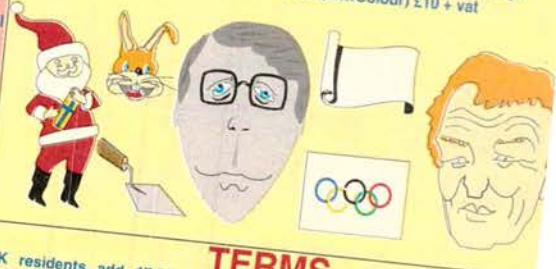
Site Licenses are Available for the above (Call For Details)

SG001 EGYPT

Studio Graphics

Top quality scalable Clip-Art. We have 9 sets available on various subjects Discs are £8 each plus vat. (EXCEPT SG002/7/10) (Ideal For Schools)

Disc SG001 Egypt 100+ files on this disc (Colour)
Disc SG002 Flags of the world 270 files (Colour 2 Discs £15 + vat)
Disc SG003 General 100+ files (Colour & B/W)
Disc SG004 Christmas 100+ files (Colour & BW)
Disc SG005 General 100+ files (Colour & BW)
Disc SG006 Borders & Cartoons (Colour & B/W)
Disc SG007 Borders For Use Within Poster 100 Files £10 + vat
Disc SG008 Borders for use within Draw or any DTP Package
Disc SG009 Greek Clip Art (BW/Colour) £10 + vat



Where to find us

From Chester follow old A55 past Holywell until you see Moor Lane on your right, turn down Moor Lane, we are at the bottom (Big White Farm Gate). From Rhyl (As Above) but turn left into Moor Lane before Holywell

TERMS

UK residents add 17.5% VAT to all prices except books. Prices an manufacturers specifications subject to change without notificatio Carriage is free (Except for books/Software/Risc-OS 3.1 & PRM's) these wi be shipped at cost. Goods offered subject to being unsold and/or availabl Goods not offered on trial basis. If you require Next day delivery please ad £12. Otherwise All goods despatched within 48 hours subject to availabilit Restocking fee on non-defective returns.

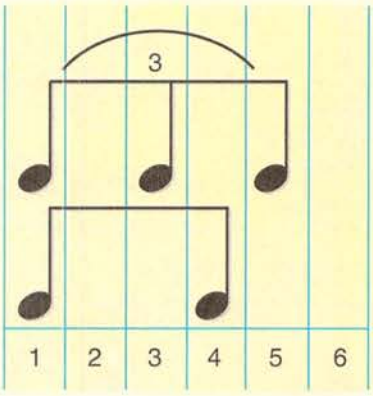
Keep on, keep on

IN this second part of our look at making music with Tracker programs, we've some suggestions on how to enter a score from sheet music plus an assortment of general hints and tips.

Many people get started with Tracker by entering a score from sheet music. This is fairly easy to do but you need to work out the timing resolution you are going to use and the number of notes and tracks you need.

Last month, I suggested that as a rule of thumb you make each step in the pattern the equivalent of a sixteenth note. However, if you have a score in front of you, you can work out exactly how long each step needs to be. If the tune only uses simple note durations such as eighths, sixteenths or thirty-seconds, the task is easy – simply make the shortest note the equivalent of one step in the pattern.

If the score includes triplets, however, you have some more sums to do. You need to need to work out the shortest time scale that can



● *This is how to keep in step*

Power-user tips

● Power users, like hackers, use the keyboard wherever possible. You have to learn the keystrokes but it's faster in the long term.

● This may be obvious, but check if there's a ReadMe file on the disk and if there is – read it. You may discover extra features or more keyboard shortcuts. In the case of Desktop Tracker you will discover that some function key operations have been reversed so you will no longer wonder why things are happening backwards.

● Get organised! Create a sample library and organise your samples so you know which disk to look on for a particular type of sound.

● Before you start work, load a selection of samples you think will be suitable for the music you want. But watch available memory.

● *Can you work out how many notes and parts there are here? The top stave in bars 5-9 contain two music parts. As each part only contains single notes, this stave would require two tracks*

● *This is a complex multi-part example. The upper stave contains two music parts. The melody is carried by the notes with the stems pointing upwards. The lower stave also has two music parts. The very lowest note is held for two bars while the notes with the stems pointing upwards play a counter melody*

trackin'

Ian Waugh delves more into making music with Tracker

accommodate triplets and straight notes.

Three triplets play in the same time as two straight notes. So, for example, if the piece contains eighth notes and eighth note triplets, you would need to use three steps per straight eighth note and two steps per triplet.

Taking notes

Next, work out how many parts the music has. This is easy to do from instrumental scores as most acoustic instruments are monophonic – only one note is played at a time –and so will usually only have a one-note line on each stave.

However, in piano and keyboard music, two or more parts are often written on one stave. This is fairly easy to spot but it can be a bit tricky working out how many notes and parts there are.

Samples are monophonic – unless the original recording was of a sound playing two or more pitches – so each note in each music part needs its own track. In keyboard music, which contains chords, you will have to look through the music to see the maximum number of notes which occur at any one time.

If you want to cut down on the number of notes, you can often omit the internal chord notes without losing too much of the music.

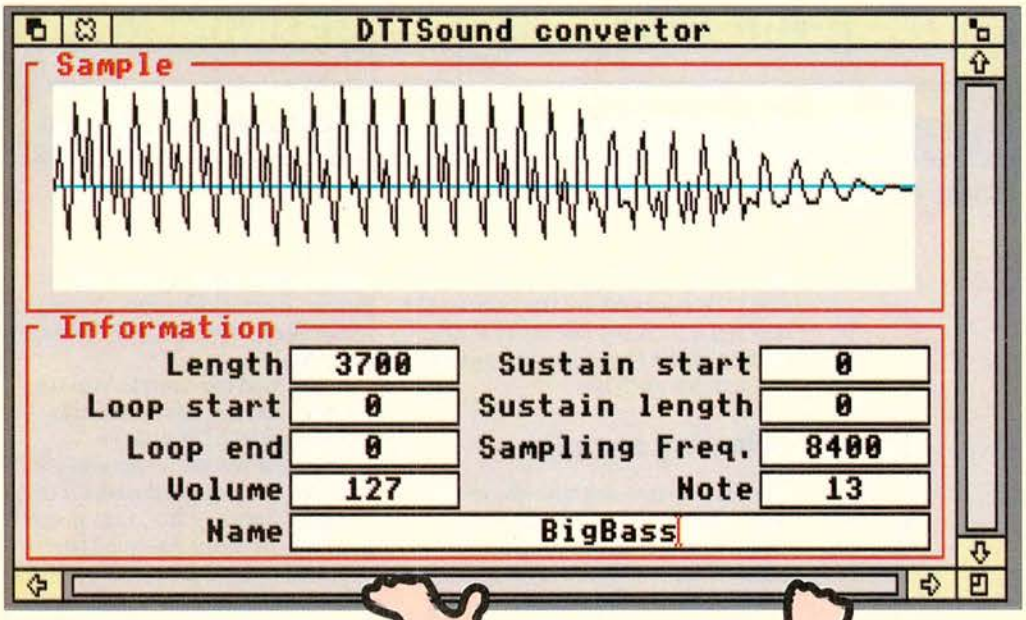
As a rule of thumb use the lowest note and the highest note – this is usually, but not always, the melody note – and then fill out with the notes in the middle.

If you can read music, use the notes which are most essential to the formation of the chord. If you don't read music here's another rule of thumb: When filling in a chord, don't use two notes with the same name until all the other notes have been used.

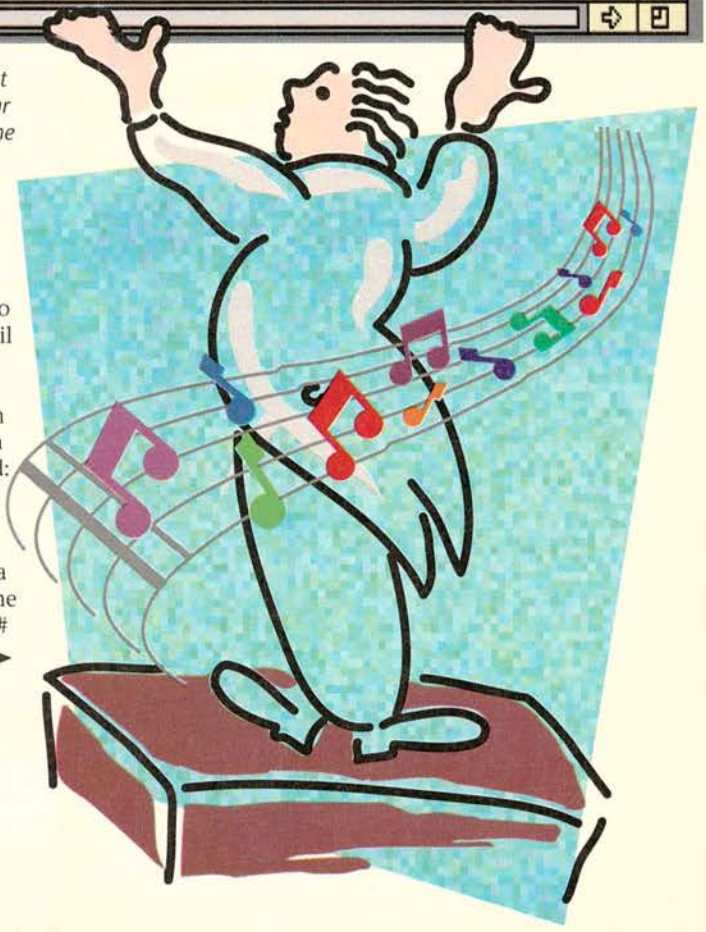
Here's a musical explanation and example – if the notes in a chord from bottom to top read:

D, A, D, F#, A, C, E

the chord would appear to be a D7 with a E melody note on the top. D7 uses the notes, D, A, F#

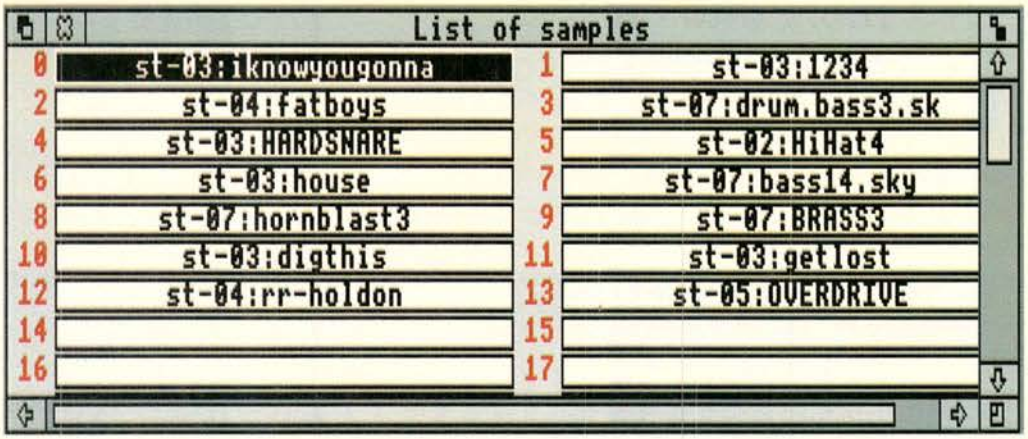


● *In Desktop Tracker, if you want the name of the sample to appear in the Sample List, you must name it in the Sample Editor*



Tracker and Midi

Desktop Tracker and Digital Symphony let you enter notes from a Midi keyboard as well as from the Arc's keyboard. If you play keyboards a little you might well find this easier. You can also select samples from a Midi keyboard by pressing the preset buttons. You may find this easier than selecting the samples on the Arc, too.



●*The list of samples used by the Tracker demo Acid House*

➤
and C. You would use the bottom D and the E then use the notes in the middle of the chord leaving one of the A notes until last.

Selecting samples

Samples are *one-shot* sounds, so will play for their duration and then stop. If the music has long notes you will have to create a loop for the sample using a sample editor provided with Desktop Tracker and Digital Symphony.

One annoying feature of Desktop Tracker is that the names of certain samples, say those in Tracker format, do not automatically appear in the name box in the DTTSounds program.

If you load the sample into the Sample List window it is simply called Unnamed sample.

To give a sample a name in the Sample List, you must name it in the DTTSounds editor, save it and then drag it to the Sample List.

A drum part will typically consist of bass, snare and hi-hat plus any tom toms, cowbells or other ancillary drums you wish to use. Each drum will have its own track although drums which don't share the same hit can often share a track at the risk of confusing the display.

A quick way to create a rhythm pattern is to use a ready-made drum riff sampled from a record or *borrowed* from a demo. This can often give you a better riff than you could perhaps create yourself. It also saves on tracks.

However, if you want to play normal notes alongside it, you will probably have to tweak the sample or the pattern length to make the notes and the riff fit together in time. For a good example of this approach check out the Acid House demo supplied with Tracker.

● *Next month we'll look at the process of making your own samples.*

Effects buster

Desktop Tracker supports almost 30 effect types although some are used to set up parameters for other effects rather than being an effect in their own right. Here are the main effect types:

Arpeggio	Playing of two separate notes in quick succession.
Portamento	Shift in pitch up or down.
Tone Portamento	Shift in pitch to a destination note.
Vibrato	Low frequency oscillation applied to the pitch of a note.
Delay	Allows you to play a note on another track after a short delay.
Tremolo	Low frequency oscillation applied to the volume of a note.

PD contacts

RML, 24 Penryn Close, Norwich, NR4 7LY.

Equinox, 27 Station Road, Earls Barton, Northampton, NN6 0NT.

Creating a sample library

If you intend to do any serious work with Tracker, you can save a lot of time by being organised. Samples are your raw material and it's a good idea to file and catalogue all the samples you acquire.

You don't need a sampler to put together a good sample collection. There are lots of Tracker demos in the Public Domain and individual samples, too. You can load in a tune and save off the samples.

In the synthesiser world, some companies add a two- or three-letter extension to sounds to indicate the sound type:

AP	Acoustic Piano
EP	Electric Piano
OR	Organ
OK	Other Keyboard
GU	Guitar
BA	Bass
BR	Brass
ST	String
WW	Wood Wind
CH	Chorus
SL	Synth Lead
SP	Synth Pad
NA	New Age
DS	Decaying Sound
DR	Drums
PR	Percussion
SE	Sound Effect

The GM (General Midi) specification – which we looked at in the February column – divides sounds into 16 categories and you may prefer to use these:

Piano
Chromatic Percussion
Organ
Guitar
Bass
Strings
Ensemble
Brass
Reed
Pipe
Synth Lead
Synth Pad
Synth Effects
Ethnic
Percussive
Sound Effects

Create your own categories based on the above suggestions. You will certainly want to add two more categories to the above – Vocals and Drum Breaks. It's a good idea to have a different disk for each sound type or at least store the sounds in different directories. You know it makes sense.

Your RISCOS Compliant Acorn Dealer!

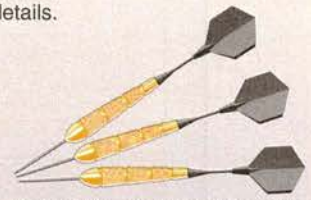
TopicArt

A new form of clip art comprising of single discs containing approximately 50 hand drawn high quality draw format clip art images, each on a single subject. Site and area licences are available, please ring for details.

TopicArt9 - Dinosaurs

Subjects available
1 - General
2 - Transport
3 - Costumes
4 - Entertainment
5 - Bugs 2 Slugs
6 - Road Signs
7 - Sports Equip
8 - Sports Figures
9 - Dinosaurs
10 - Symbols
11 - Tools

£8 + VAT per disc



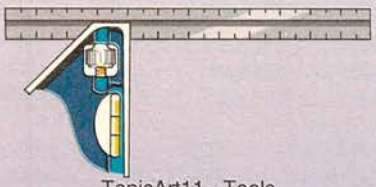
TopicArt7 - Sports Equipment

TopicArt4 Entertainment

11 TopicArt subjects are available now. Please specify when ordering.

TopicArt8 Sports Figures

Buy 4 TopicArt discs get one free



TopicArt11 - Tools

RISCOS 3.1 A300(Complt.)	£63.83
RISCOS 3.1 A3000-A540	£42.70
RISCOS 3.1 A5000	£16.17

Ink Jet Refills

Why throw away empty inkjet cartridges... ...when you can refill them at a fraction of the cost

Colours available include
Cyan, Magenta, Yellow, Black, Red, Green, Blue, Brown

Single Refills (req an orig cartr.)	£7
Twin Refills (req an orig cartr.)	£12
Please specify colour(s) required	
125ml Cleaning Kit	£4
400ml Cleaning Kit	£10
ColourSep software	£15

Can be used with DeskJets, BJ's, JP's + others. Ring for further details.

QuickShow £25+VAT

!QuickShow
Video Titling
&
Slide Show Presentation
Has never been easier!

QuickShow is an easy to use slide show presentation and video titling package. It allows you to create a sequence of frames containing text of any colour with drop shadows, outline shadows and rubout boxes using outline fonts. Sprites can also be included in frames and positioned and resized as necessary. Once several screens have been created they can be linked together with the sequencer which allows you to fade each screen out and in with the many fades provided with the package. Completed sequences can be converted to a stand alone application which when run, automatically 'Shows' the sequence without using !QuickShow. 2Mb RAM required.

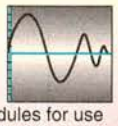
QuickTile v1.01 £25+VAT

Up until now it has only been possible to print posters from Draw & Sprite files. Now with QuickTile you can create posters from ANY RISCOS application.

Simply enter the size of poster required & select PRINT from the application! QuickTile does the rest, printing each tile with crop marks & refs. **Needs RISCOS 3.10 or later. Send v1.00 disc back for free u/g. U/g from Tiler - £15+VAT**

QuickSnd£10+VAT

QuickS(ou)nd allows you to load, play, convert & resave existing samples. Armadeus, Tracker, raw data formats are supported. Samples can also be converted into modules for use with the sound system, Maestro, Rhapsody etc or converted into stand alone Utility sample modules which when called, via a star command, loads the utility, plays the sample and then removes itself completely from memory. Special effects which can be applied to samples include Reverse, Echo, Max Vol, alter replay rate and resample at other frequencies. QuickSound is perfect companion to the Oak Sound Recorder.



Hardware, Software & Books (All prices exclude VAT)

Pocket Book/Psion

Acorn Pocket Book	£212
Psion 3 256k	£185
A-Link for either of the above	£51

A3010 Series

With Free 3yr Warranty & On-Site Maintenance

A3010 Family Solution	£424
A3010 Lrng Curve Sys	£680

A3020 Series

With Free 3yr Warranty & On-Site Maintenance

A3020 Floppy System	£749

As above less Lng Crv & joystick prts

A3020 60MHD System	£899

As above with 60Mb Hard disc
Add £50 for MultiScan Monitor

A4000 Series

With Free 3yr Warranty & On-Site Maintenance

A4000 Home Off. Sys	£999

2Mb RAM, Floppy Drive, 80Mb hard disc, std mon, EasiWriter2, database.

A4000 80MHD System	£949

Add £50 for MultiScan Monitor
For 1Mb 386 PC card add £250
For 4Mb 486 PC Card add £450

A5000 Series

With Free 3yr Warranty & On-Site Maintenance

A5000 Lrng Curve Sys	£1445
A5000 2M80HD Sys	£1399
A5000 4M120HD Sys	£1599

Add £175 for Microvitec CubScan 1440 Monitor

Acorn A4 Series

Free TrackBall & SpareBatt

A4 4MHD Portable	£1699

Finance 28.9% APR

Finance is available on all Acorn Hardware, subject to status. Please ring for details. 13.75% APR finance is available on the Acorn Assist Scheme. Special offers do not apply to finance or the Teachers Acorn Assist scheme.

Monitors

Acorn Standard/MultiScan	£199/£249
Microvitec Cub Scan 1440	**£399**
0.28dp, 40 presets & 3yr Warranty	
Philips 1710 17" FST	£849

Hardware Upgrades

ARM3 (25MHz)	£175
Canon BJ TurboDriver (CC)	**£42**
Joystick Interface (all m/c's)	**£32**
JoyMaster (A3010 only)	**£24**
Midi Expansion Card	£65
Scanlight 256	£199
ScanLight Professional	£549
Vision Digitiser Mono Int	£48/Ext £60
Vision Digitiser Colour Int	£76/Ext £89

RAM Upgrades

A3000 Up to 2/4Mb RAM	£45/£129
A3010 Up to 2Mb RAM	£39
A3020/A4000 Up to 4Mb RAM	£79
A5000 Up to 4Mb RAM	£79
A400 RAM	£35 per Mb

Hard Discs/Flopticals

The following are complete systems.

IDE Archimedes Internal	
120Mb 16ms Cache	£275
200Mb 13ms Cache	£375
520Mb 12ms Cache	£Call
IDE A5000 Internal	**2nd / Exch**
120Mb 16ms Cache	£235 / £185
200Mb 13ms Cache	£345 / £295
IDE A3000 External	
120Mb 16ms Cache	£355
200Mb 13ms Cache	£455
IDE A3000 Internal Hard Cards	
20Mb	£189
60Mb	£329
SCSI Archimedes Internal	
120Mb 18ms Cache	£395
200Mb 18ms Cache	£545
520Mb 12ms Cache	£Call
SCSI A3000 External (with int card)	
120Mb 18ms Cache	£475
200Mb 18ms Cache	£625
SCSI Removable Hard Discs	
44Mb 20ms (incl 1 cartridge)	£499
SCSI 128Mb Magneto Optical Drive	
128Mb Internal Mag-Opt Drive	£749
External case for above	£69
128Mb Mag-Opt Blank Discs	£39

Printer Consumables

BJ-10/BJ-200 Ink Cartridge	£16/£17
BJ-300 Ink Cartridge	£11
DeskJet500 Mono/Col Cartr.	£23/ £24
Swift24 Mono/Col Ribbon ea.	£5/£15

Printers (Inc Cable/Driver)

Canon BJ-10sx / Turbo	£199/£239
Canon BJ-10 ASF	£49
Canon BJ-200 / Turbo	£299/£329
Canon BJ-300	£339
Canon BJ-330	£399
HP DeskJet 500	£299
HP DeskJet 500C Colour	£389
HP DeskJet 550 Colour	£499
HP LaserJet 4 (600dpi)	£Call
Laser Direct HiRes4 / 8	£949 / £1319
Laser Direct HiRes4 Board	£349

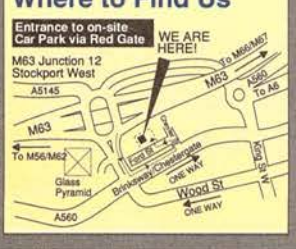
Books (No VAT)

A3000 Technical Guide	£29.95
A540/A5000 Tech Guide (ea)	£65.00
Acorn BBC Basic Guide	£19.95
Acorn RISCOS3 PRM's	£99.00
Acorn 1st Word+ Manual	£10.00
Acorn DTP Manual	£10.00
Acorn AASM Manual	£25.00
Acorn ANSI C v4 Manual	£25.00
Archi Game Maker's Manual	**£14.95**
Begin's Guide to WIMP Prog	**£14.95**
Dabs Archi Assembly Lang	£14.95
Dabs Archi First Steps	£9.95
Dabs Archi Operating System	£14.95
Dabs Mastering 1st Word+	£13.95
Dabs Basic V Guide	£9.95
DTP on the Archimedes	**£12.95**
First Impressions (inc discs)	**£35.00**
Good Impressions (inc discs)	**£30.00**

Terms EC residents add 17.5%

VAT to all prices except books. Carriage free in UK(except books, RISCOS3.1), elsewhere at cost. Orders MUST be accompanied by a phone number. Prices and spec's subject to change without notification. Goods subject to availability. Goods not offered on trial basis. Restocking fee on non-faulty returns. Official orders welcome, chq with order < £25.

Where to Find Us



Application Software

Advance (Acorn)	**£95**
Arc DFS (Dabs)	£22
ArcTerm 7 (Serial Port)	£62
Arctist (4D)	£20
Armadeus (Clares)	£65
Art Works (CC)	**£129**
CADet (Minerva)	£139
Chameleon 2 (4mation)	£35
Compression (CC)	£35
Desktop C v4 (Acorn)	£180
Desktop Thesaurus (RISC Dev)	£19
Digital Symphony (Oregan)	**£40**
Equasor (CC)	£37
Eureka (Longman)	**£99**
Font FX (DataStore)	£9
Graphbox Pro (Minerva)	£109
Home Accounts (Minerva)	£34
Illusionist (Clares)	£79
Impression II (CC)	£125
Impression Junior (CC)	£75
Impression Bus Supp (CC)	£39
Magpie (Longman)	£49
MasterFile III (RISC)	**£47**
Notate (Longman)	£54
PenDown Plus (Longman)	**£68**
Pin Point (Longman)	£79
Pin Point Junior (Longman)	£23
PipeDream 4 (Colton)	**£119**
PlayBack (RISC)	**£17**
Poster (4Mation)	£75
ProDriver DJ500C/550 (Ace)	**£39**
Render Bender v2 (Clares)	£79
Revelation II (Longman)	£110
Rhapsody v2 (Clares)	£49
Rhapsody v3 (Clares)	£79
Rythmn Bed (Clares)	**£45**
S-Base Personal (Longman)	**£79**
Serenade (Clares)	**£99**
ShapeFX (Data Store)	£9
Sleuth (RISC Dev)	**£47**
Snippet (4Mation)	£35
Squirrel Database (Dig Ser)	£120
Superior Speech!	£15
Titler (Clares)	£119
Tracker (Serial Port)	£37
TypeStudio (Beebug)	£43
Vector (4Mation)	£75
Vox Box (Clares)	£49
Worra CAD (Oak)	£83
Wordz (Colton)	**£95**

Games Software

Air Supremacy (Superior)	£17
Alderbaran (Evolution)	**£26**
BattleChess (Krisalis)	**£22**
Black Angel (4D)	£26
Blitz (Arxe)	£17
Break 147 & Superpool (4D)	£26

Games Software (Contd)

Cataclysm (4D)	£19
Champions (Krisalis)	**£22**
Chess 3D (Micro Power)	£19
Chocks Away Extra Miss(4D)	£15
Chocks 2 Compendium (4D)	£26
Chopper Force (4D)	£22
Chuck Rock (Krisalis)	£19
Cyber Chess (4D)	£26
Cyborg (Alpine)	£19
Cycloids (Software 42)	**£19**
Dreadnoughts (Turcan)	£26
Dungeon (4D)	**£26**
Elite (Hybrid)	£32
Enter the Realm (4D)	£19
E-Type Compendium (4D)	£19
Fervour (Clares)	£19
Fred (Software 42)	**£17**
Fun School 2/3/4 ea. (5, 5-7, >7)	£18
Games Wizard (Leading Edge)	**£26**
GODS (Krisalis)	£19
Gribbly's Day Out (Coinage)	£19
Guile (Dream)	£22
Heimdall (Krisalis)	**£22**
Hero Quest (Krisalis)	**£22**
Holed Out Compendium (4D)	£19
Ixion (Software 42)	**£19**
James Pond (Krisalis)	£19
Krisalis Collection	£22
Last Ninja (Superior)	£19
Lemmings (Krisalis)	£19
Lotus Turbo Chall 2 (Krisalis)	£19
Manchester Utd Europe (Krisalis)	£19
MicroDrive 2 (CIS)	£26
MIG 29 Fulcrum (Domark)	**£26**
Nebulus (Krisalis)	£19
Oh No More Lemmings (Kris)	£16
Omar Sharif's Bridge (Krisalis)	**£22**
Pandora's Box (4D)	£19
Paradroid 2000 (Coin-Age)	**£19**
Play It Again Sam 1 (Superior)	£19
Populous (Krisalis)	£22
Quest for Gold (Krisalis)	£19
Real McCoy 2/3/4 each (4D)	£26
Repton 4 (Superior)	£18
Saloon Cars Deluxe (4D)	£26
Sal. Cars Del. Extra Cses (4D)	£15
Sim City (Krisalis)	**£26**
Spheres of Chaos (Matt Black)	**£19**
SWIV (Krisalis)	£19
Technodream (Superior)	**£19**
10/10 Early Essentials <7yr (3R)	**£19**
10/10 English 6-16yrs (3R)	**£19**
10/10 Maths 6-16yrs (3R)	**£19**
Twin World (Cygnus)	£14
Waterloo (Turcan)	£19
X-Fire (4D)	£19
Zool (Gremlin)	**£22**

Desktop Projects Ltd

Authorised Acorn Dealer (Fax No. 061 474 0781) E & OE
Unit 2A, Heapriding Business Park, Ford St, Stockport, Cheshire, SK3 0BT

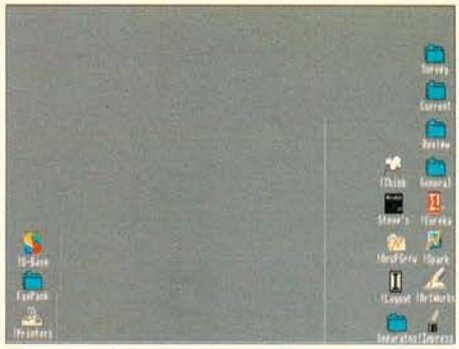
Tel: 061-474 0778

Access VISA SWITCH

Registered

● *An example of a typical Desktop !boot file – after editing*

● *You can have your applications at the top, or wherever you fancy*



IN my last article I covered the new software and possible compatibility problems with Risc OS 3.10 in your machine. In this article I will discuss the new functionality of some of the Applications and the new Desktop facilities.

The first thing to note will be the new style of desktop. It appears very similar to the old Risc OS 2.00 desktop, but has lots of goodies built in. The Switcher icon in the rightmost location of the icon bar has been changed into an Acorn rather than the old Archimedes A. The Task Display can now be displayed just by clicking the Switcher icon rather than having to go via a menu.

Task windows have been better implemented – you can press Control+F12 to get one displayed. They're still somewhat idiosyncratic, but much more versatile.

● *The applications directory icon is new to your icon bar*

There is a new option on the Switcher menu called Desktop Boot which leads to a Save as dialogue box containing a Desktop icon. By dragging this icon to a drive (preferably a hard drive) you can have the machine boot up automatically with all your favourite programs loaded. It also saves all the environment configurations and paths to applications which, on boot up, will be setup again and their sprites loaded for later use.

It is best to start with the machine just switched on, load the applications you want to always have on the icon bar, close all the open windows and then save the !boot to the root directory of your hard disk. Then, every time you switch on your machine, those applications will auto-boot and be sitting on the icon bar ready for use.

The !boot will also open any directories which were open on screen when it was saved and it will run the !boot file of any applications which it has seen.

Information about these are all saved in !boot, you can simply drop the file into !Edit and delete anything you don't want, or add new commands or instructions.

As you can see, looking at the !boot file from one of my machines (top left), I almost always use !Edit, !Alarm and !Printers, so I have set !boot to auto-load them, and also do a Filer_Boot on some of my favourite applications.

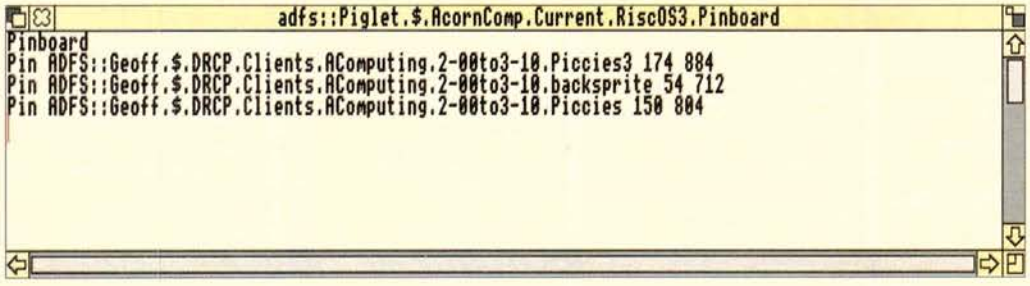
Moving back to the desktop itself, the major thing that will be immediately noticeable to Risc OS 2.00 users is the new Apps icon on the iconbar next to the disk drives. This directory shows all the applications held in rom (inside the machine).

Included in Apps are some of everyone's favourite programs – !Alarm, !Calc, !Chars, !Configure, !Draw, !Edit, !Help and !Paint. Because these are in rom, they take up much less room when run. !Edit, for example, now only takes 64k instead of the 160k it did under Risc OS 2.00.

There have been many enhancements to these basic applications, which incorporate most of the features and functions that were added by third parties to the old Risc OS 2.00 apps.

It is also possible to have third-

● *A typical Pinboard file listing the icons to be displayed*



Boots, tasks and messages

Geoff Gallacher explores more of the facilities and abilities of Risc OS 3

● *Three ways of displaying sprites on the Pinboard backdrop – centred, scaled or tiled, the choice is yours*

party programs held in modules and added to what appears in Apps. For example, there's a module version of the virus-detecting !Killer program which, when loaded, appears in the Apps directory.

Pinboard

Clicking Menu on the background pops-up a menu for an application called Pinboard. This is similar to the Risc OS 2.00 third-party PD backdrops such as !PlaceIt and has most of their best features.

With Pinboard, you can put a sprite on the background and display it in three different ways. You can drag and drop files on to the backdrop, tidy these into neat rows or make them automatically snap to a pre-defined grid.

You can also iconise an open window, which means that you can take any window and reduce it to the size of an icon and leave it on the backdrop.

If it is an application window, it will continue being serviced by the wimp, and carry on with whatever it was doing.

This can be quite useful for graphics programs which might take a long time to do their business. In a ray-tracing program for example, an iconised window won't have lots of time-consuming screen-updating. To iconise a window, simply hold down Shift and click the window's close icon. To get it back to full size double-click on the icon.

If you do a lot of DTP work, this is an ideal way of clearing up the clutter of numerous windows or open documents on the desktop without closing them all and then trying to remember where you put them on your hard disk.

There is, however, one drawback of being able to shrink a working window neatly: You can end up working on two copies of the same document. For example, modify a document, iconise it to get it out of the way, forget you did it and open another copy and start working on that. You then remember that you had a different window and there is it on the Pinboard – your dilemma is, which one do you save?

A simple way to get around this, and stop it from ever happening to you, is to save your work before you iconise a window, then if you re-load from disk, it will be the same as the one on the Pinboard.

Iconised windows are not saved in the Pinboard file or in a !boot, so these will not be re-loaded when the Pinboard file or !boot is run.

Resources

Now let's explore the Resources. This is a directory, and behaves much like a disk directory but it's in rom and holds the built-in applications described earlier, some fonts and all the main message files for Risc OS 3 to function.

Point at the Apps icon and click Menu to display the short Resources menu which has just one entry: Open '$'. Click on this and a directory viewer opens which contains three directories: Apps, Fonts and Resources. You can't save anything to this directory because the data is held in rom – you can try it just to see what happens.

The Resources.Fonts directory has three basic fonts: Corpus, Homerton and Trinity and include Bold, Bold-Italic, Medium and Medium-Italic versions.

All over the world

Internationalisation is a buzz-word in the personal computer world at the moment, and it refers to the idea of making your machine and programs operate correctly in any language. It's the messages file that helps with this.

Every text phrase in the computer has a code (an identifier) and a path which points to the message file that the identifier resides in. When the program wishes to write something on the screen it calls the universal message handler and says: *Please give me the phrase from the file at the end of this path, associated with this identifier.*

The message handler goes away, finds the file, the identifier in the file and the text associated with it. Then it comes back and gives the program the appropriate phrase.

For example the message file might contain the following:

```
HLO: Good morning, sir
```

So if the program wanted to print this message on the screen it would use the identifier *HLO* and call the message handler which would return with the phrase *Good morning, Sir.*

Now, suppose we wanted to use the computer in French. We would supply a path to the messages file with the same set of identifiers but with French phrases. So you might have:

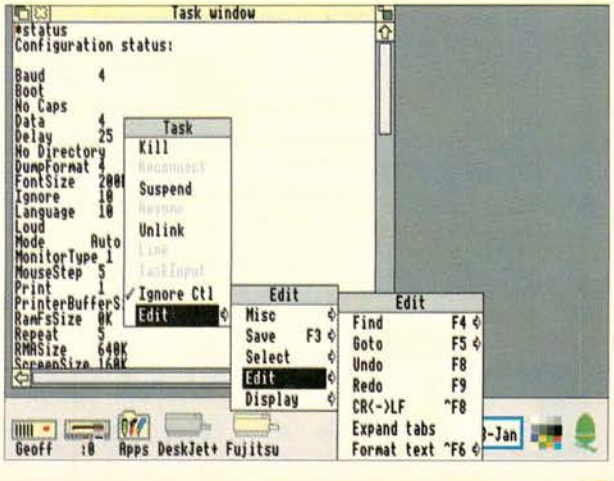
```
HLO: Bonjour, Monsieur
```

So our program would now work in French, without altering the program or how it functions in any way – you just supply the messages file in the right language.

● *Next time we'll look at what the new Risc OS 3 Applications Suite gives you and some more of the enhancements of the rom-based applications.*

HINT

If you can't read your screen too well, close down all windows, go to the palette icon, click Menu, go to the Modes sub-menu, enter 22 then press Return. Now you can sit on the other side of the room and use your computer – now you know why Acorn give you four feet of cable on the mouse.



● *You can issue just about any operating system command from a task window*

COMPUTECK Ltd

VISA - MASTER - SWITCH - LOMBARD CARDS

This advert contains just a few of the items we have. Please telephone or send a SAE for our FULL price list

A3010 Family Solution £395.00
A3010 Learning Curve Colour £632.40
A3010 FD System Colour £632.40
A3020 FD System Colour £896.57
A3020 HD 60 System Colour £838.07
A4000 Home Office System Colour £929.07
A4000 HD 80 System Colour £882.57
A5000 2meg HD 80 System Colour £1301.07
A5000 2meg HD 80 L/Curve Colour £1344.74
A5000 4meg HD 120 System Colour £1487.07
A4 Floppy Drive Laptop Computer £1259.10
A4 HD 60 4meg Laptop Computer £1529.10
Master 128 8 bit Basic Computer £359.10
MONITORS, PRINTERS, DISC DRIVES, PLOTTERS – YOU NAME IT WE SELL IT
We operate to ACORN Assist Scheme for Teachers and Students
In fact there's not much we don't do - DTP Service in Full Colour - Colour photo Copying - T Shirt printing - your designs in colour £7.99 inc. T Shirt - We even sell Nintendo and Sega Consoles and games!

PRICES DO NOT INCLUDE V.A.T

We specialise in "Trading in" and buying used hardware and software

DELIVERY
£1.00 for small, £2.45 for medium
Expensive products £9.00 for courier

Dinting Lane Industrial Estate, Glossop, Derbyshire, SK13 9NU TEL: 0457 865953 FAX: 0457 869917

USED STOCK SELECTION

COMPUTERS & HARDWARE

BBC B 1770 DFS Series 3	75.00
BBC B 1770 DFS Series 4	75.00
BBC B 8271 DFS Series 3	75.00
Master 512 Board	149.00
Master Compact Entry System	135.00
Z80 Second Processor	90.00
Medium Res Colour Monitor	149.00
Brother HR40 Daisy Wide Carr.	346.96
Mannesman Tally MT85 9 pin	69.00
D/D 5.25 40/80T with PSU	150.00
Dual Drive 80T no PSU	120.87
Plotmate A4 Plotter (B)	198.00
Second Drive A3000 3.5	95.00
30meg Hard Drive (BM)	99.00
Sidewise ROM/RAM Board BBC	27.00
I/O Podule Archimedes	49.00
Master ROM Cartridge	8.00
Music 500 Package	40.00
Prestel Adaptor (BM)	40.00
5.25 Disc I/Face Archimedes	20.00
Touch Pad	15.00
8K SRAM Module	12.00
Delta 14B/1 Interface/Voltmace	6.00
GIS Teletext Adaptor	60.00
Grafpad	60.00
Printer Sharer 6 Comps to 1 Pr	160.00
Prism Modem 2000 In Software	60.00
Twin Joysticks	8.00
Care dual 2 x 16K cartridge	8.00
Teletext Adapter with ATS	60.00
Pace Nightingale Modem	60.00
Avanced Rom adaptor MK II	8.00
Cartridge System Master 128	10.00
Replay 1770 BBC B	27.00
128k ROM /RAM Card Bat Back	59.00
32K Shadow RAM Board	25.00
Archi-BBC Serial Link	10.00
Beeb Video Digitiser	60.00

BOOKS

Advanced User Guide BBC	10.00
RISCOS Prog ref Manuals	49.00
View Ref Manual	6.00
View Store Manual	6.00
Archi Assem Lang Book & Disc	13.04
Archimedes First Steps	6.00
View Dabhand Guide	8.00
30 Hour Basic	4.00
60 Progs for the BBC	4.00
Arc. Operating sys.	13.04
Beginners Guide to View	3.00
Graphics on the BBC	4.00
Graphs & Charts BBC	3.00
Risc Os prog. Ref Manual	49.00
The Computer Book/BBC Publics	3.00

SERIOUS SOFTWARE

AMX Desk (BM) Disc	12.00
AMX Super Art ROM (B)	25.00
Stop Press Discs (M)	25.00
PC Emulator (A) Discs	60.00
1st Word Plus Rel 2 (A) Disc	30.00
Basic Editor (BMC) ROM	15.00
BCPL ROM (B)	31.31
Complete Cocktail Maker (B) DI	6.00
Database (B) Disc	7.00
Desk Top Publisher (A) Disc	49.00
Farmcash (A) Disc	135.00
GXR Rom (B) ROM/Tape	16.00
HI - View (B) Disc	22.00
Linkword Spanish (BM) Tape	10.00
Maze (B) Disc	5.00
Micros In Business (B) Disc	15.00
Overwrview (B) ROM	50.00
Software Devil Toolbox (A) Disc	45.00
View Index (BM) Disc	6.00
View Plot (BM) Disc	15.00
View Spell (BM) ROM & Disc	20.00
View Store (BMC) ROM	30.00

ArcComm (A) Disc	20.00
Picture Craft (B) Disc	10.00
Ultracalc (B) Disc	15.00
VU-Type (B) Tape	6.00
Arcscan III (A) Disc	12.00
Discmaster (B) Disc	6.00
Exmon II (B) ROM	15.00
Filer (BM) Disc	6.00
Hershey Chars (B) Disc	6.00
Master ROM (M) ROM	20.00
Masterfile II (B) Disc	12.00
Murom (B) ROM	15.00
Printwise (BM) Disc	15.00
Quickcalc (B) Disc	8.00
Sleuth (B) ROM	18.00
Spellcheck (B) Disc	12.00
Spellcheck II (B) ROM/Disc	15.00
Teletext (B) Tape	3.50
Teletext Pack (B) Disc	7.00
Toolkit (B) ROM	12.00
Vocab Tester (B) Tape	8.00
Wordease (B) ROMs	12.00
Artisan (A) Disc	15.00
Artroom (C) Disc	15.00
Artroom (M) Disc	15.00
Artroom (M) Disc	12.00
Beta Base (B) Disc	14.35
Beta Base (M) Disc ADFS	15.00
Beta Base + Utils (B) Disc	18.00
Beta Base Utils (B) Disc	6.00
One Shot (B) Disc	5.00
Render Bender (A) Disc	39.00
Replica II (B) Disc	8.00
The Key (B) Disc	5.00
Beeb Calc (B) ROM	12.00
Equasor (A)	25.00
Graphics (BM) ROM	15.00
Gremlin (B) ROM	15.00
Inter-Base (BMC) ROM	35.00
Inter-Sheet (BMC) ROM	30.00
Inter-word (A) ROM	12.00
Inter-Word (BMC) ROM	30.00

Spell Master (A) ROM	10.00
Wordwise Plus (BM) ROM	25.00
Fingerprint (BM) Disc	6.00
Hyperdriver (C) Disc	12.00
Shareware Coll Vol 2 (M) Disc	12.00
Fun School 3 (5-7) (BM) Disc	6.00
Fun School 3 Under 5 (A) Disc	12.00
Mini Office II ROM (MC)	30.00
ARCticalate (A) Disc	12.00
Graphic Adv Creator (B) Tape	10.00
Music System (BM) Discs	19.00
Home Accounts (A) Disc	25.00
Inter/View Link (C) Disc	10.00
Multistore v2 (A) Disc	95.00
Stock Management (C) Disc	26.04
Psychic Powers PSI-Q (B) Disc	6.00
Account Book (Business) BM	19.00
BeebDOS (BM) Disc	25.00
CaresDisc Squirrel (BM) Disc	9.00
Computer Awareness Course (B)	10.00
Creation Discs (A) EMR 6xDiscs	26.04
Easy Type Tutor	12.00
EMR Rhythymbox (A) Disc	23.00
Euclid (A) Disc	34.00
Fax File+A4 system (BM) Discs	20.00
Fontaid (B) ROM & Disc CJE	15.00
Gemini Combo Pack (B) Disc	12.00
Graphics Library (A) Micro Std	12.00
Graphics Pack (B) Tape Salaman	3.00
Icon Art Master (BM) Disc	12.00
Invoicing (B) Disc	10.00
Life & Buss Organiser (B) Disc	6.00
Machine Code Tutor (BM) Tape	10.00
McVid Graphics (BE) Disc	6.00
Merlin Database/Scribe (B) ROM	17.34
Micro Viewdata Prestel (B)	12.00
Midge Message Compr (B) Disc	6.00
Music Collection (B) Disc	8.00
Personal Accounts (BM) Disc	12.00
Peter Beater Music (BM) Disc	8.00
Pixel Perfect Maths Pack (B)	10.00
Pixel Perfect Print Pack (BM)	10.00

Prestenter II (A) Disc	20.00
Pro Punter (BM) Discs	30.00
Share Anal -Synergy (B) Disc	26.04
Slave + ROM (B)	20.00
Spanish level B (BM) Disc	10.00
Spy (B) ROM	12.00
STARdataBASE (B) Disc	10.00
Startrader (A) Disc	10.00
U Connect (A) Disc	15.00
Vector 2 Disc to Disc	6.00
Vistfax-Viewdata (B) ROM	20.00
Vu-Calc (Psion) (B) Tape	8.00
VU-File (B) Tape	10.00
Welcome FORTH (B) ROM HCCS	18.00
ZOOM Mach. Code Monitor (B)	10.00
Desfax Teletext Emul (B) Disc	10.00
Grafik (BM) Disc	4.00
Illustrator Paintbox (C) Disc	10.00
Micronet Terminal (B) ROM	8.00
Adv'd Disc Toolkit (BM) Rom	20.00
Beebmon (B) ROM	20.00
Colour Art (B) Disc	6.00
Disc Database (B) Disc	10.00
Dumpout 3	12.00
NLQ Designer (BM) ROM	12.00
Quest Paint (BM) ROM	20.00

GAMES

Dronga (B) Disc	5.00
Firebug (B) Disc	5.00
Interdictor 2 (A) Disc	20.00
Hypersports (B) Disc	6.00
Apocalypse (A) Disc	10.00
Enter the Realm (A) Disc	12.00
Inertia (BM) Disc	6.00
Powerband (A) Disc	12.00
Quazar (A) Disc	6.00
Real McCoy (A) Disc	18.00
Real McCoy 2 (A) Disc	15.00
U.I.M. (A) Disc	13.00
White Magic (A) Disc	10.00

Hoverbod (A) Disc	8.00
Minotaur (A) Disc	8.00
Boxing Manager (A) Disc	12.00
Dominate (A) Disc	10.00
Fine Racer (A) Disc	12.00
Fish (A) Disc	15.00
Iron Lord (A) Disc	8.00
Question of Sport (BM) Disc	6.00
Terramex (A) Disc	12.00
Barbarian II (BM) Disc	6.00
Citadel (B) Disc	4.00
Conqueror (A) Disc	14.00
Exile (BM) Disc	8.00
Galaforce (BM) Disc	4.00
Karate Combat (B) Disc	6.00
Palace of Magic (BM) Disc	4.00
Pipeline (BM) Disc	6.00
Quest (BM) Disc	4.00
Ravenskull (BM) Disc	6.00
Repton 2 (BM) Disc	4.00
Repton 3 (BM) Disc	6.00
Ricochet (BM) Disc	6.00
Sam 14 (BM) Disc	6.00
Sam 4 (C) Disc	7.00
Spellbinder (BM) Disc	4.00
Spycat (BM) Disc	6.00
Thrust (B) Disc	4.00

BBC B & MASTER 128 USERS WE HAVE NOT FORGOTTEN YOU !

PINEAPPLE SOFTWARE

The Pineapple Colour Digitiser

Since we originally introduced the Pineapple Video Digitiser over two years ago we have not needed to modify the design of the hardware in any respects. However, the software has been continually improved to the point where the quality and quantity of software supplied is second to none.

Because we are so confident that you will find the Pineapple Digitiser superior to anything else available, we offer a full no questions asked money back guarantee. Some of the features of the Pineapple Digitiser, many of which are still exclusive are as follows:-

* 16 Bit true RGB storage in 256k Ram
* Sequences of frames of a moving picture can be grabbed and replayed. Up to 30 frames in a 1Mb computer, 200-300 frames with more memory!
* Full screen area normally seen on a TV set is grabbed in full
* Images may be processed using our own high speed software routines or by using Acorn's ChangeFSI software
* Quite simply the most powerful and easily used zooming and cropping routines available with any processing package
* Available in stand alone box for use with A3000. In this mode it can be used with A300/400/500 series computers only occupying one expansion slot
* Adapter now available to enable the boxed version to be used with A3010, A3020 and A4000 computers.

A300/400/500 £199.00 +vat

A3000/Boxed £235.00 +vat

Internal / External Expansion Adapter

This new product from Pineapple is an internal expansion card for the A3000, A3010, A3020 & A4000 computers which provides an external expansion connector similar to the A3000. In the case of the A3000 this then provides two expansion slots, and for A3010, A3020, & A4000 a single external expansion. This enables external devices such as our Video Digitiser to be used with A3010,A3020, & A4000 computers. All address and data lines are fully buffered.

MEA/2 £28.00 +vat

!KILLER

Removes ALL the known VIRUSES

Don't take chances with your valuable software. Use the program that Acorn themselves use to check for viruses.

!Killer, together with VProtect will detect and remove all of the 43 viruses which are currently known. Because new viruses are being discovered all the time our virus protection scheme will provide you with 3-4 updates of the software each year. We can also offer immediate advice by telephone.

Aprilfool	*Archie*	*Arcuebus*	*BBCEconet*	*Bigfoot*	*Boohoo*
Breakfast	*CeBit*	*Code*	*Ebenezer*	*EMod*	*EX_port*
Extend	*ExtendV2*	*Funky*	*Garfield_1*	*Garfield_W*	*Handler*
Icon	*Image*	*Increment*	*IRQFix*	*Link*	*Mode87*
Module	*MyMod*	*NetManager*	*NetStatus*	*NewDesk*	*Parasite*
Penicillin	*Poltergeist*	*Runopt*	*Sprite*	*SpriteUtils*	*Tasmanager*
T2	*Terminator*	*Thanatos*	*TrapHandler*	*Valid*	*Vigay*
Wimpman					

Don't wait until you discover you have a virus!!

One years subscription costs just £24.00 + vat

Low cost school and county licences available

Access

39, BROWNLEA GARDENS, ILFORD, ESSEX, IG3 9NL

Add 17.5% vat **Tel 081 599 1476 Fax 081 598 2343** *P&P Free*

Barclaycard VISA

The German connection

Mike Cook answers another selection of technical posers

AGENDA

- Adding sideways rom/ram
- Accessing a broken directory
- Unresponsive drives
- A newline in characters
- Using VGA monitors
- Midi access
- Disk transfers
- Blank screens
- New !System

Q I ACQUIRED a German model BBC B computer in 1985, complete with its metal case. However, I now wish to fit a sideways rom/ram board. I sought assistance from Watford Electronics but they said that the German BBC has a different circuit layout to the UK one and that they had no boards which would fit my computer. Nonetheless they recommended my trying an external rom/ram unit.

While looking for such a unit I discovered a letter in the February '87 issue of *The Micro User* describing a similar case. The correspondent was attempting to fit an external Rom unit but was unsuccessful.

If a an internal board won't fit and it it appears difficult to fit an external unit, what other unit will? Also, will the German board affect the introduction of a second 6502 processor? **– J.W.A. Burch, Weston Super Mare, Avon.**

A *What you want is a rom board that is designed not with the ridged* ***north sea oil rig*** *type design but that has its attachment made by ribbon cable. This is how the majority of home made upgrades work. If you don't feel up to making your own you can try an external rom board.*

The only difficulty I can foresee here is if the attaching cable is not long enough to stretch from a rom socket to the edge of the box. You could always get an extension lead but this might cause difficulties with signals. Alternatively you could fit the external box on top of the printed circuit board with the lid of the case removed.

The German design should not affect the fitting of a second processor. Incidentally I still have a few of these left priced £25 + £3.50 P&P + VAT.

Mending a directory

Q I HAVE not had a hard disk drive – for my A3000 – for very long but I have recently obtained the error *Broken Directory*. I have seen the error before on floppies and have had to reformat the disk. I cannot find any documentation regarding this error.

Could you explain what the cause is and whether it can be overcome? How can I now access the files on my hard disk or are they lost for ever? **– G. Conridge, Bedford.**

A *The Broken Directory error message means exactly the same as it does on floppy disks: The information that tells the computer where the files are stored has been damaged. It can result from either an operating system software error or a disk crash caused by something like turning off the computer before parking the head.*

In theory the files are still there on the disk and it is possible that disk recovery software could extract some of the files. However, I don't think disk recovery software that good has been written yet for these computers.

If there has been, I don't know of it – try scouring the adverts. The moral is, never keep anything on hard disk that you can't afford to lose or haven't got on floppy.

Terminated

Q MY combination of computer and drive has started to malfunction and I hope that you can advise.

With all connected (so far as I can see) correctly, when I type *MOUNT0 nothing happens, the keyboard is dead. When I type *MOUNT1 both the drives light up and I get the message *Drive Error 50 at 1:000002*.

When I open the drive casing and unplug the ribbon cable from either drive the other works correctly, that is drive 0 responds to *MOUNT0 and Drive 1 responds to *MOUNT1. **– J. Lunan, Northwich, Cheshire.**

A *What you have here is a doubly terminated system: Each disk drive has its terminating resistor pack fitted. As a consequence when both drives are fitted, the signal is too weak to control them correctly. The solution is to remove the terminating pack from one of the drives, preferably the one that is not at the far end of the cable.*

The only problem is how to identify ➤

Accessing the Midi

Q MY son has recently acquired a Casio CT700 electronic keyboard which has a Midi (Musical Instrument Digital Interface) facility. We also have a BBC B computer and would like to know what can be done using the two machines together.

My son likes to compose his own music so is it possible for the computer to write the score automatically while he is playing and save it to disk for printing later? The technical side should hold no terrors for me as I am an electronic engineer but my knowledge and experience in this particular field is zero.

Another small problem on which I would appreciate your help is as follows. I have developed a short !Boot file to set up the computer for View wordprocessing. I would like Caps Lock off and Justification to be set automatically. Can you suggest a way of doing this? **– M. Dewhurst, Colchester, Essex.**

A *What you require is a Midi interface for your computer. However, as the Model B has not been in production for some years you might have a bit of trouble locating one. Try contacting EMR (Electro Music Research) on 0702 335747. They produce an interface for the Archimedes and might have some of their old 8-bit interfaces and software available.*

After that it is a matter of software that limits what Midi can do. Basically the Midi system transmits key presses and durations. This could be transposed into conventional musical scores or saved and edited. However, Acorn's computers never did have much Midi software. That mantle was taken up by the Atari ST where there is a much wider choice of Midi software.

*You can get the caps lock off by including a *FX202, 16 in the boot up file but I don't think the justification can be set on boot up.*

➤

the pack. Normally this will be the only chip in a socket and the case will be ceramic and not plastic. Remove this from one drive and you should be able to use both.

New jargon for old

Q COULD you please explain to me what a Newline character is and what does it look like as I need to use Edit and Draw?

I have tried using the example in the User Guide and every time I try and save it to Draw it states that there should be a Newline character at the end of the text. **– G. Yalden, Havant, Hants.**

You can write to Mike Cook c/o Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

He will answer any questions about difficulties you may be having with your machines, mainly those to do with hardware. If you want a personal reply ensure that you enclose an SAE with your letter.

A *This just shows that we oldies steeped in computer jargon can make things very difficult for a beginner.*

It's one of those problems that's so easy to sort out once you know it, that it is no longer thought of as a problem. Simply put, a Newline character is produced every time you press Return.

You can't see it but the cursor appears on the next line down. Therefore, before you put text into Draw press the Return key on the last line.

Disk transfers

Q CAN you offer any advice about transferring software from 5.25in disks for a BBC B to 3.5in disks for the A3010? I have recently bought an A3010 and have several educational games I would like to retain. Acorn have informed me that I cannot attach my old disk drive to the A3010 to complete the transfer myself.

I have access to an IBM computer at work which takes both sizes of disk but am not sure if I could use this to transfer the disks without special software. **– J. A. Lewis, Gt Yarmouth, Norfolk.**

A *As yet, Watford do not have an adaptor to connect the 5.25in disks to the A3010 but I am told it is only a matter of time before one is produced. If you still have your old computer you could try the Watford Serial Link to transfer the files across or the versions available from Risc Developments or RGSC. Try contacting local schools or colleges to see if they could help you as they often have both types of machine.*

You could in theory use an IBM computer equipped with both drives but you will find that no one has written the software to do this. This is because it is quite complex and requires a detailed knowledge of both PC and Acorn filing systems.

Updating your System

Q I AM having some difficulty loading some of the programs off the MegaDisk. When I try to load either Populous or CADet on to my A3000 with 2Mb upgrade I get the error message *System resources cannot be found.*

If I then load !System from my Apps1 disk and try to load again I get *You need CLib 3.75 or later* or with the latest Acorn !System off another disk I get *File Modules Clib not found.* **–T. D. Butler, Burton on Trent, Staffs.**

A *Many applications need to share operating system software; Acorn's philosophy is to place most of it in rom. However, there is a set of operating system calls constantly under development and improvement. These are held in a !System directory.*

In order to see if the correct module has been loaded, an application will check that the module is present and that it has a version number at least equal to the one used when it was created. All this is done in the !Run file.

Now, if a program was written in the C language it needs a support module Clib, short for C libraries. As all C programs need this it would be a little wasteful including this in every program. Therefore it is normally found in the !System file.

If you open this up by double clicking it, you should see another folder called Modules. Double click this and you should see one called Clib. It is this one that needs to be replaced as it is not an up-to-date version. See Newcomers on page 28 for how to update your System.

Monitoring the VGA

Q I HAVE a BBC A3000 running Risc OS 2 although I soon hope to upgrade to 3.1. I also have a DELL VC-2EN VGA monitor with a lead coming out of it terminating in a 15-pin connector with some pins missing. The monitor scans at 50/60Hz.

Is it possible to use this monitor with my A3000 and will I need Risc OS 3? Also, will something like the Watford Electronics VGA adaptor or a VIDC enhancer allow me to use Modes like 12 and 13? If it is possible, how do I get a lead to connect my A3000 to the monitor? **– K. Wraight, Harnam, Salisbury.**

A *In order to connect your monitor to your computer you will need Watford's VGA adaptor cable or something similar. However, as your monitor is not multi sync you will only be able to use modes 21 to 24 and 28.*

The VIDC enhancer is a device to let the computer produce more modes and as such will not affect what the monitor can show. There is no way you can show Mode 12 and 13 on this model.

Blanking nuisances

Q I RECENTLY purchased an A3010 computer and up until now have been using it with great success. Recently I bought Lotus Turbo Challenge 2 from Krisalis and Quest for Gold from Acorn/Krisalis.

Playing Lotus for about the third time the screen suddenly turned to a jumbled mass of yellow and blue, the only way to clear it being to press Escape. All was fine for another five days when the same fault occurred with Quest. It always occurred with these games, never when I was on the desktop itself.

I then realised that pressing any key would restore the screen to normal and this made me think of the screen blanking facility in Risc OS 3.1. Turning this to Off seems to have cured the fault. Could you advise me whether I am correct? If so is there any way to have both the screen blanker and the game?

My second query is more of a question than a problem. I read in *Acorn User* that some early A3010s were fitted not with an ARM250 but a *mezzanine* board with a slowed-down ARM3. Can you tell me if I have one of these computers – from the serial number – and if so whether it has any implications in the way of upgrades and expansion? **– N.J. Ralph, Evington, Leicester.**

A *I understand that there are several games where the built-in screen blanker interferes with the operation, but other commercial and PD blankers such as Twilight don't suffer from this.*

On your second point, simply open up your computer and see if you have a board over the place where the ARM chip should go.

Before the launch of these machines when I had a preview I opened two up and they both had the correct chips in. However, even if you did have a board like this I don't think it would affect anything.

Fast, efficient mail order service for your Archimedes!

Product Checklist

	Our Price
Arcade Games	
2067BC	16.95
Aldebaran	31.95
Axis	**22.50**
Black Angel	32.50
Cyborg	21.95
Dungeon (Hopefully soon!)	32.50
Many special offers on games new and old! Details in our FREE catalogue!	
Fervour	21.95
F.R.E.D	18.95
GODS	25.99
Gribbly's Day Out	21.95
Guile	18.95
Hero Quest	29.99
Humanoids/Robotix	21.95
Ixion	21.95
James Pond	25.99
Killerbugs	21.95
Lemmings	25.99
Loopz	9.95
Oh No! More Lemmings	19.95
Paradroid	22.95
Pesky Muskrats	21.95
Populous	29.99
Raw Power	21.95
Ego: Repton 4	21.95
Serpents	16.95
Spheres of Chaos	21.95
S.W.I.V.	25.95
Technodream	21.95
The Last Ninja	21.95
WolfPack	17.95
ZOOL	**22.95**
"Mind" Games	
Battle Chess	29.99
Cardmania	21.95
Chess 3D	15.95
Cyber Chess	32.50
E-Numix	21.95
Omar Sharif's Bridge	29.99
Simulation Games	
Air Supremacy	21.95
Chocks Away Compendium	37.50
Chopper Force	26.95
Dreadnoughts	29.95
Flight Simulator Toolkit	29.95
Mig 29 Fulcrum	21.95
Populous	29.99
Saloon Cars Deluxe	31.95
Lotus Turbo Challenge 2	25.99
Sim City	34.95
Waterloo	21.95
Adventure Games	
Heimdall (Due May/June)	29.99
Pandora's Box	24.50
SpySnatcher	13.50
Sport Games	
Champions	29.99
MicroDrive 2	29.95
MicroDrive Designer	29.95
Quest for Gold	25.99
Compendiums	
Champions	29.99
Krisalis Collection	29.99
Play It Again Sam	21.95
Real McCoy 2, 3, or 4 (each)	32.50

Music/Sound Applications	
Desktop Tracker	69.95
Digital Symphony	46.95
Rhapsody 2	51.95
Rhythm Bed	44.95
Score Draw	51.95
Serenade	129.95
Leisure/Various	
Touch Type (Typing Tutor)	44.95
Games Wizard	29.99
Utilities	
BJ10ex Turbo Driver	55.95
Illusionist	89.95
Pipedream 4	149.95
Render Bender 2	89.95
Word Processors	
Desktop Thesaurus	18.95
Easiwriter	159.95
Pendown Plus	83.50
Start-Write	71.95
Techwriter	209.95
Wordz	103.95
Spreadsheet	
Eureka	119.95
Schema	114.95
Databases	
Archivist Pro	42.75
Datapower	149.95
Desktop Database	52.95
Knowledge Organiser 2	91.95
Pinpoint	103.95
S-Base Developer	209.95
S-Base Developer +	315.95
S-Base Personal	103.95
Languages	
C Development system	81.95
Desktop C	234.95
Educational	
10 out of 10 Maths	23.50
10 out of 10 English	23.50
10 out of 10 Early Essentials	23.50
An Eye for Spelling	36.95
Ancient Greece	25.95
Animated Numbers	25.26
Arcventure 1 – Romans	37.54
Arcventure 2 – Egyptians	37.54
Arcventure 3 – Vikings	37.54
Badger Trails	46.94
Balloons/Zoo	35.25
Best Four Adventure Programs	39.95
Best Four Maths Programs	39.95
Best Four Language Programs	39.95
Billy – Bothersome Bully	11.69
Castle of Dreams	23.50
Chemistry Superstar	24.50
Connections	32.31
Doris the Dotty Dog	11.69
Edwina's Energetic Elephant	11.69
First Words & Pictures	22.95
Freddy Teddy's Adventure	18.95
Fun School 2 0-6/6-8/8+ yrs- each	15.95
Fun School 3 & 4 offer! Buy any two £37.95 Buy any three £56.95	
Fun School 3 0-5/5-7/7-11yrs- each	21.95
Fun School 4 0-5/5-7/7-11yrs- each	21.95

House of Numbers (6-13yrs)	22.95
Geordie Racer	25.50
Kid Pix	39.95
Let's Spell Special 4 Pack!	24.95
Linkword French	39.95
Linkword German	39.95
Linkword Spanish	39.95
Little Red Riding Hood	14.95
Letters & Pictures (6-8 yrs)	19.95
Mega Maths (A Level)	21.50
Micro English (8yrs - GCSE)	21.95
Micro French (8yrs - GCSE)	21.95
Micro German (8yrs - GCSE)	21.95
Micro Maths (11yrs - GCSE)	21.95
Micro Science (8yrs - GCSE)	21.95
Number Zoo	14.85
Primary Maths (3-12yrs)	21.95
Reading Writing Course	21.95
Round World Yacht Race	29.95
Selladore Tales	29.32
Sherston Naughty Stories Pk	58.46
Shylock Gnomes	19.95
Smudge the Spaniel	21.95
Spelling Week by Wk (6-14)	22.95
Stig of the Dump	28.14
Terry's Tricky Trainers	11.69
The Puddle & the Wardrobe	29.95
The Worst Witch	31.67
Theresa's Terrible Trumpet	11.69
Time Traveller & Resource Pack	59.95
Time Traveller – Britain 1930	34.95
TinyLogo/Tiny Draw (4-9yrs)	29.95
Toby Troublesome Tractor	11.69
Topographer	71.95
TV Fun & Games	18.95
Full range of Educational software available! Please ask for our FREE catalogue	
Communications	
ArcComm V2	61.95
Arcterm 7	67.95
Hearsay 2	74.95
Desktop Publishing	
Good Impression (Tutorial)	28.95
First Impression (Tutorial)	31.95
Impression 2	145.95
Ovation	98.95
Artworks	169.95
Peripherals & Hardware	
Joystick Intfce V2.4 (Leading Edge)	39.95
Joystick Intfce Extension Cable	9.95
JoyMaster (For A3010)	19.99
Clares Micro Mouse	27.50
Dust Covers	
300/400 K'bd & Monitor	12.25
A3000 K'bd only	5.55
A3000 K'bd & Monitor	12.25
A3010/20 K'bd & Monitor	12.25
A3010/20 K'bd only	5.55
A5000 K'bd & Monitor	12.50
Books	
D/Hand Guide – Impression	12.95
D/Hand Guide – Graphics ARM	12.95

Remember this when comparing prices!
**** Free Carriage on a total order when you buy a Krisalis product! ****

£3.00 Off

Buy any of these

- Champions
- Chuck Rock
- GODS
- Hero Quest
- James Pond
- Lemmings
- Lotus Turbo 2
- Man Utd Europe
- Nebulus
- Omar Sharif's Bridge
- Populous
- Quest for Gold
- Sim City
- S.W.I.V.
- The Krisalis Collection
- Battle Chess

And take £3.00 off anything else!

£3.00 off anything else at the time of ordering (excluding other Krisalis titles) or take a £3.00 voucher to spend at a later date – the choice is yours!

PLUS FREE Carriage too!

The Sherston Naughty Stories!

- Billy the Bothersome Bully
- Edwina's Energetic Elephant
- Terry's Tricky Trainers
- Theresa's Terrible Trumpet
- Doris the Dotty Dog
- Toby the Troublesome Tractor

6 beautifully illustrated and animated stories that young children will love to read and listen to over and over again

Only £11.69 each Age Range 5 - 7 yrs

Or Buy all Six for £58.46!

Spend Over £35.00

and you can have a stylish lockable disc storage box for only **£5.00!**

BBC, Master 128, Electron and Master Compact software!

All the Play It Again Sam compilations from £6.95 each; many other games, and educational software!

Send for our catalogue!

Parents! Teachers! and Pupils!

BBC B Computers Only £176.25 Inc

Or £229.95 with 40/80t drive
Also includes View & Speech ROMs!

FREE Quarterly news magazine with product descriptions, review comments and Special Offers! Get yourself on the mailing list today!

Seikosha SL 95 Colour Printer
24 Pin Dot Matrix only £249.95

Price includes VAT, Carriage & cable
UK Mainland only, excluding Scottish Highlands

Special Joystick Packs!

(Quickshot 3 Turbo/Python I)

Pack One Joystick Interface V2.4 and 1 x Quickshot 3 Turbo **£49.95**
Pack Two Joystick Interface V2.4 and 2 x Quickshot 3 Turbo **£59.95**
Pack Three Joystick Interface V2.4 & 1 x Superpro Auto Joystick **£51.95**
Pack Four Joystick Interface V2.4 and 2 x Superpro Auto **£61.95**

(Superpro Auto)

RISC OS 2 and 3 compatible!

(AC73)

Please send me your FREE CATALOGUE!

Name _____

Address _____

_____

_____

_____

Post Code _____

Archimedes Series ☐ BBC B/B+/ Master 128/ Master Cpct ☐ Electron ☐

Software Bargains & Mercury Games

Dept AC73, C/O Northwood House, North Street, LEEDS LS7 2AA
Tel: 0532 436300 Fax: 0532 423289

* Access/Visa Welcome
* Please add 95p P&P (Europe £2.50, Outside Europe £4.50)
* All prices include VAT @ 17.5%
* Goods despatched within 48 hrs (subject to availability)

* Educational discount of up to 30% off SRP (not Sale prices as shown in this advertisement) available on most Archimedes software; Official Order No. or school headed notepaper required - minimum order value £30.00 for invoicing, otherwise cheque with order. Please call to confirm your order

(Prices are correct at the time of going to press, E&OE)

Vive la resolution

Rob Miller blazes a trail through Acorn screen modes

BACK in the mists of time, when the first BBC Micro was launched, screen modes were something everyone could understand.

There was Mode 7 for teletext, five modes for graphics and a couple just for text. You could either have two, four or eight colours and the maximum resolution was 640x256.

Now, an ordinary 32-bit machine, such as the A3010, comes with 45 modes as standard and the situation is worsened with the advent of resolution enhancers such as Computer Concepts' Colour Card and State Machine's G8+.

● *The Risc OS 3 screen modes as displayed by Computer Concepts' Flip Top utility*

What is a mode?

Put simply, a mode is a set of numbers (parameters) that control the display. There are a number of *seed modes* from which all others are derived. The parameters include necessary data such as the number of colours that can be displayed at one time and the resolution.

New modes can be generated with a bit of programming, or by using one of the mode designers available from most PD libraries and bulletin boards. When a new mode has been created, the parameters are stored in a software module that can be used as soon as it's loaded.

You may have come across modules called something like !NewModes. The DTP program Impression II comes with such a module. It allows a large display area on the Desktop, thus making it possible to have bigger windows.

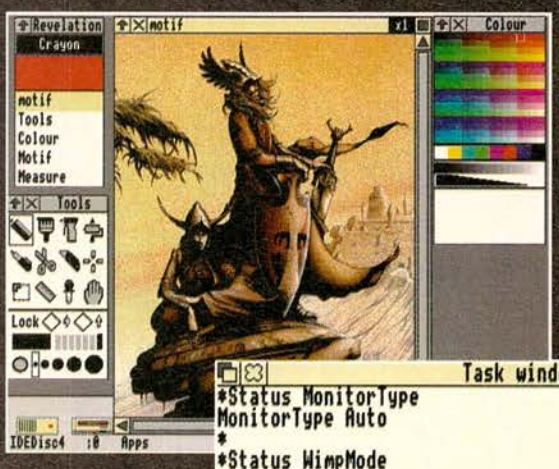
As with the original BBC Micro, the operating system writers thought about how the computer would be used and designed a set of modes to fit the various situations.

A low resolution, 256-colour mode (Mode 13) was provided for games and educational use and a (then) high resolution, 16-colour mode (Mode 16) for text-based work. An intermediate resolution, 256-colour mode (Mode 15) caters for those who wish to produce pictures with art packages.

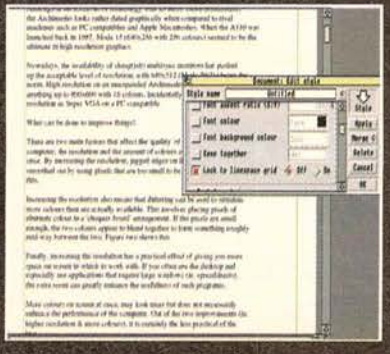
Screen for all seasons

Different types of monitor can only display certain sorts of modes so part of the permanent memory (the cmos ram) is set aside to store the type of monitor being used. This allows the operating system to select only modes that can be displayed

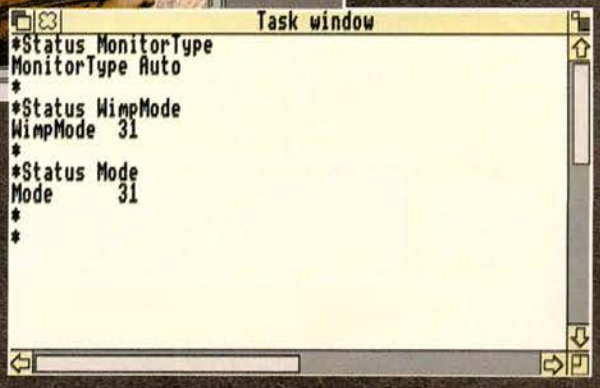
● *A Screen Mode designer in action*



● *An art package running in Mode 21 (650x512 with 256 colours)*



● *Impression II running in a special mode*



● *Reading the monitor type and default screen modes with !Configure*

● *Over 65,000 colours using a graphics enhancer board*

on that particular monitor. To find out what monitor type you have press F12 (or Shift+F12 on Risc OS 3) and then type:

```
Status MonitorType
```

This will give a message something like *MonitorType 1* which means the computer is set up for connection to a multi-scanning monitor. You may also get the reply *Auto* which means that the hardware detects what monitor is connected every time you switch on.

If you have Risc OS 3 fitted, you can run the !Configure program from the Apps directory, and then select the Screen option. This will then give a list of possible monitor types with the current one highlighted.

With Risc OS 3, and a medium resolution monitor – or a television in the case of the A3010 – all the low-end modes are available. Connecting a multi-scanning monitor to the Archimedes gives you access to higher-resolution modes.

The addition of a resolution enhancer will allow you to achieve even higher resolutions with multi-scanning monitors, and new modes are provided for via software modules.

Some programs, such as games, will automatically change the mode to ensure they run correctly. But those that run in the Desktop should be what's called *Mode Independent* which means that they will function in whatever mode you select.

If you are running software in the Desktop, you should select a mode that suits the task in hand. As well as making sure you have the right resolution and enough colours, there is also the question of memory usage.

Memory matters

A high resolution, 256-colour mode will use up far more memory than a medium resolution, 16-colour mode. If you were doing something such as wordprocessing, it is obvious to go for the latter, while detailed graphics work is best done using the former.

Using higher resolution modes also has the effect of making the computer operate at a slightly slower speed than it would if a lower resolution mode was being used. This is because the computer has more information to move about on screen, and therefore needs to spend a little more time dealing with the display.

Graphic enhancer boards cancel this problem out giving fast speeds with high resolutions.

Permanent modes

When you first turn on an Acorn machine, it looks at its permanent memory (cmos ram) to find out what mode it should start up in. Two settings can be altered: One for when it starts up in the Desktop and one for when it doesn't.

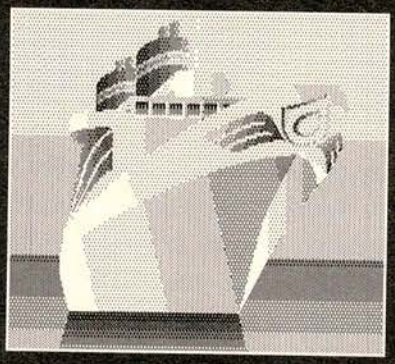
Pressing F12 – or Shift+F12 on a Risc OS 3 machine – gives you the command line where you can type:

```
Configure WimpMode <mode number>
```

followed by Return to set the Desktop mode and:

```
Configure Mode <mode number>
```

to set the the non-Desktop mode. On Risc OS 3 you can use the !Configure application, Screen section, to set the mode for the Desktop.



● *Displaying an ArtWorks file in a range of screen modes:*

Mode 0: 2 colours, 640 x 256 pixels

Mode 9: 16 colours, 320 x 256 pixels

Mode 13: 256 colours, 320 x 256 pixels

Mode 27: 16 colours, 640 x 480 pixels

Mode 28: 256 colours, 640 x 480 pixels

We are fully qualified ACORN EDUCATIONAL DEALERS

THE DATA STORE

Whether you want the latest game, advice on what to buy, technical or programming information, repairs, spares, or just a pleasant chat about what's new, you'll always be welcome to drop in to see us. You never know, you might spot something unusual amongst our full range of peripherals and software for all Acorn computers. But if you're too far away, why not try our mail-order service? After all, we're celebrating our tenth anniversary this year, so you'd might as well make use of our experience!

6 CHATTERTON ROAD,
BROMLEY, KENT BR2 9QN
Tel: 081-460 8991 Fax: 081-313 0400

Contex Computing

Established 1983

BANK MANAGER

Complete and versatile personal accounts program. Consistently acclaimed!
'data entry is a delight... professional...excellent product"
'impressed...ideal...easy to use'
Enter cheques and receipts. Automatic date sequencing. Reconcile statements. Search, amend and delete. Analyse expenditure. Forward cash flow forecast. Budgets. Up to 36 Bank accounts online, inter account transfers, 9999 standing orders, 99 analysis headings, unlimited postings (depending upon disk space). Reports to screen or printer. Mix foreign currencies, graphics, password, file recovery, field editing, programmable reports, Arc RAM disks, wild card analysis enquiries, sort and more.

Bank Manager £25.00

BUSINESS UTILITY

For the club accounts or small business user. Prints a "trial balance" or "P&L reports" via the programmable spreadsheet generator. Needs the Bank Manager. Saves hours of work.

Business Util Pack £12.00

TYPING TUTOR

Quickly learn to touch type. Over 90 smoothly graded lessons graduate you from the basic home keys to complete keyboard mastery. Word scan or exact key checking, targets may be revised, rhythm metronome, key click, free format options. Recommended for adult education.

Typing Tutor £15.00

SPREADSHEET MK V

Low cost, versatile spreadsheet. 26 cols by 900 (Arch) or 99 (BBC B) rows, loaded with many functions and facilities inc programmable report writer and input scripts.

Spreadsheet MK V disk £15.00

Add £1 p&p per order (Overseas £3.50). Programs suitable for all Archimedes, A3/4/5000, BBC Master, Compact and BBC B series. State computer type (eg A3000, BBC B etc) and disk type (eg 3½" or 5¼" 80 track or 5¼" 40 track)

CONTEX COMPUTING
(Ref AC), 15 Woodlands Close,
Cople, Bedford MK44 3UE

VISA Access

Tel: 0234 838347

Archimedes Hints & Tips Compendium

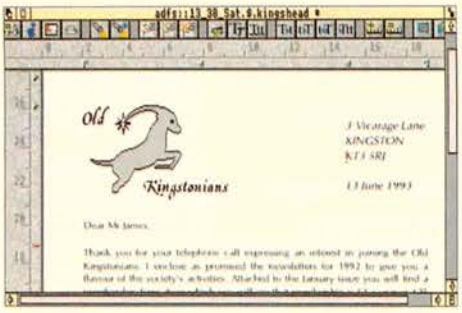
Over 1,500 Hints and Tips about various aspects of using the complete Archimedes range of computers.

Over 200,000 words on disc for ease and speed of reference. Available in Edit format on 2 x 800Kb discs. (Paper copies, including diagrams, available as an extra.)

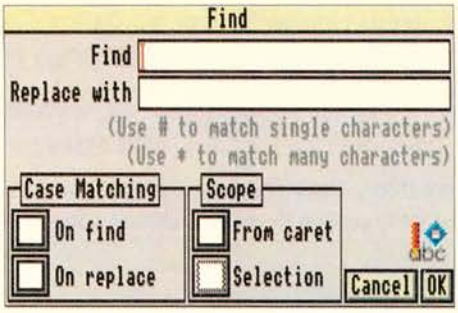
Price: £13 inclusive (or £11 on 1.6Mb disc)

Send a cheque for £13 (or £11) to: Norwich Computer Services
96a Vauxhall Street
Norwich NR2 2SD

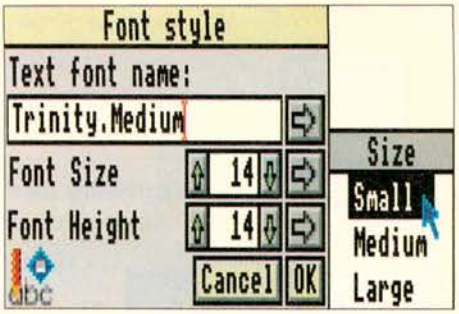
Phone 0603-766592 *Fax 0603-764011*



● *A PrimeWord document in its window*



● *The Find and Replace dialogue*



● *The straightforward way to change text style*

Prime time

Bruce Goatly finds the early word catching the term

WORDPROCESSING in schools places demands on software that domestic and business programs don't have to cope with. The main one is the need to cater for different skill levels of users, from beginners to advanced. Minerva's latest offering, PrimeWord, is one of a series of education-oriented software.

The default opening screen is attractive if, at first sight, a little cluttered. Across the top is the increasingly popular button bar providing easy and graphical access to many of the commands. The standard button set is slightly wider than a Mode 12 screen, but you can scroll the bar sideways to display off-screen buttons by dragging on the spaces between them.

In fact, all the button bar functions can – if you really want – be accessed by clicking Menu on the bar, so you don't even have to remember what the buttons do. The page rulers are on a tastefully textured background, an effect that, like the 3-D button style, can be turned off. The side ruler measures from the bottom of the page – unusual but logical.

What makes PrimeWord special is the customisable button bar. Beginners can start with just a few buttons and add more as they gain experience. To reach the *Button setup* dialogue requires a password, so it's up to teacher or parent.

Setting margins and tabs on the top ruler is made easier by a vertical line that appears down the page while dragging – there's no need to guess where the active point is.

Adding and deleting tabs can be done via a menu or, for the normal sort, more conveniently by double-clicking on the ruler. Setting the header and footer areas on the side ruler is similarly easy.

The format of text is easily altered by creating or changing text rulers. The left margin is a single marker, which unfortunately rules out the possibility of hanging indents. Every ruler contains the line spacing information, so a draft of a document with several rulers can't easily be printed out in double spacing – each ruler has to be changed separately.

Text editing

PrimeWord is Risc OS compliant and uses the outline fonts rather than the system font. One each of Montclair and Tabloid – similar to Homerton and Trinity – are provided on the program disk.

All the normal wordprocessing facilities are available but the editing functions are perhaps the program's weakest point. The Acorn-prescribed Edit method is used, which involves both a selected region and a caret. As in Edit a special keystroke – Ctrl+Z – is needed to clear the selected region.

While I have no quibbles about the method as such, it is simply a dead end in an environment where users will progress to other applications that use the clipboard-type method, and will inevitably lead to confusion and frustration.

What's worse, because PrimeWord has no clipboard, Ctrl+X *really* means delete, without even Edit's safety net of an Undo option.

This affords enormous potential for unlimited disaster.

That aside, there are also some rather pleasant features, such as the four case-conversion options, which work both at the caret and on selected regions. The *Find and replace* dialogue has a wildcard facility and several useful options. The spelling checker contains over 50,000 words and you can set up your own user dictionaries.

Text style and colour are easily altered, either at the caret or in a selection and the text style dialogue is particularly easy to use.

Mailmerge is also provided and data from a variety of databases, as well as CSV files, can be imported. The fields are identified in the form letter by curly braces and the whole procedure is straightforward. There's no preview option – the only way to see your merged letters is by printing them out, so data accuracy is vital.

Pictures can be inserted at any point and size in a document, though they simply form a kind of backdrop on the page. If you want text round a picture you have to format it yourself with a ruler.

PRODUCT SPOTLIGHT

Product: PrimeWord
Price: £59.95
Supplier: Minerva Software, Minerva House, Baring Crescent, Exeter EX1 1TL
Tel: 0392 437756

Summing up

PrimeWord is a versatile and attractive wordprocessor with a range of good features. The user-configurable button bar gives it special appeal for use in schools. Of the few drawbacks the only serious one is the text editing system, which may cause some despairing cries in class.

Watford Electronics Ltd

Established 1972

Mail Order & Showroom: Jessa House, Finway, off Dallow Road, Luton, LU1 1TR, England
Tel: 0582 48 77 77 Tlx: 8956095 WATFRD Fax: 0582 488 588

Showroom Only: Jessa House, 250 Lower High Street, Watford WD1 2AN, England
Tel: 0923 237774 Fax: 0923 233642

The sign of Quality

Shop Hours: 9am to 6pm (Mon.-Sat.) Thursday 9am to 8pm. FREE customer car park.
All prices exclusive of VAT; subject to change without notice & available on request.

Acorn

The choice of Experience

Archimedes micro

System	Basic	Colour	Multiscan
A3010-1Mb Family	£424	£625	£769
A3010-2Mb L/C	–	£680	–
A3020-2Mb FD	–	£749	£799
A3020-2Mb HD60	–	£899	£949
A4000-2Mb HD80	–	£949	£999
A4000-Home Office	–	£999	£1049
A5000-2Mb HD80	–	£–	£1399
A5000-L/C 2Mb HD80	–	–	£1445
A5000-4Mb HD120	–	–	£1599
A5000-2Mb ES	–	–	£1299
A5000-2Mb NS	–	–	£1399
Pocket Book	£212	–	–
Pocket Book Class	£2127	–	–

On-Site Maintenance now available on all Archimedes Micros. Please telephone for details.

Archi A4 Notebooks

A4 Notebook with 2Mb RAM	£1399
A4 Notebook 4M RAM/60M HD	£1699

FREE OFFER

When you purchase any of the above Archimedes Micros, we will give 10% of the value of the machine in Hardware or Software of your choice

Acorn JP150 Ink Jet Printer £199

Archi Accessories

- 5.25" 800K external Floppy Drive £80
- Acorn I/O Podule (Analogue/User/1MHz bus) £79
- I/O Podule (Analogue/User) £59
- MEMC 1A Upgrade £29
- MIDI add-on to Acorn I/O Podule £27
- MIDI Expansion Card £65
- Archi replacement mouse – New design £29
- PC Emulator £95
- Floating Point Unit £455
- Keyboard Extension Lead £6
- 2 Podule Backplane £20
- 4 Podule Backplane £25
- Fan for above backplanes £10
- Risc Os Extras Software Disc £5
- SCSI Card 8 bit £129
- SCSI Card 16 bit £149
- SID Utilities Discs – Set of 4 £19
- ST506 Hard Disc Controller Card £99
- A5000 Dust Cover £9
- A5000 Technical Reference Manual £65
- A4 Spare Batteries £49
- IDE ROM Upgrade for use with RISC OS3 £16
- Scanlight Junior £199
- Scanlight II A4 £279
- Scanlight II Sheet Feeder £139
- Scanlight Professional £529
- CC Faxpack £289 • Colour Card £239

RISC OS 3 Upgrades

- A 5000 Software Upgrade Kit £16
- Software Upgrade Kit for the rest £40
- Hardware Upgrade Kit 300/440 £25

Watford Electronics Headquarters – Luton

Scan256 Grey Scale Scanning

If you need a 256 grey-scale hand scanner for your Archimedes then look no further.
Scan256 gives you up to 256 levels of grey at a maximum of 400dpi and is supported by state-of-the-art sophisticated software – **for only £159.** This makes it the only sensible scanning and image processing solution for the Acorn 32-bit range. Just compare these features:

- More than one copy of the image held in memory at once.
- Allows multiple consecutive operations without saving the original to disk.
- Highly advanced dithering and image size reduction.
- Convolution digital filtering with over 100 filters gives high quality images from poor quality scans.
- Adjustable scale and size during scan.
- Supports State Machine G8 Graphics Card.
- Includes shearing and rotation.
- Saves images in industry standard formats: TIFF, Sprite and AIM.
- True brightness, contrast and gamma correction.
- Multiple options – scale to page, centre sideways selected area.
- Selectable scanning modes.
- Plus much much more...

Please specify Archimedes type, not compatible with A3010, A3020, A4000. **£159**

- Scan256 for A3000 Micro £169

A3010 DTP Pack

Supplied with 3.5" Floppy Disc Drive and a mouse, Colour Monitor and lead, TV modulator, 30Mb fast IDE Hard Disk Drive, 'Compression' utility to increase the Hard Drive capacity to typically 60Mb, the highly acclaimed Computer Concept's Impression Junior DTP package, EasiWord wordprocessor, Quest for Gold game, applications suite of software packages and comprehensive audio training tape.

RRP: £1095

Sale Offer Price: £775

- A3010 DTP Pack with Learning Curve £875
- Additional 1Mb RAM fitted £39

Special Education discounts available on micros, RAM upgrades, ARM 3 Turbo Card, etc. Please write in or telephone:

0582 48 77 77

NEW **Special Finance Deal**

Now everyone can afford an Archimedes Micro with Watford Electronic's up to 60 months instant credit facility.

(Please telephone 0582 45 44 55 for details)

Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

- **R300**-4 Layer RAM upgrade board (Bare). £25
- **R302**-A3000 – to 2MB RAM Upgrade £29
- **R303**-A3000 – to 2MB RAM Upgrade (expandable to 4MB) £49
- **R304**-A3000 – to 4MB RAM Upgrade £99
- **R305**-A3010 – to 2MB RAM Upgrade £39
- **R306**-A3020/A4000 – to 4MB RAM Upgrade £70
- **R311**-A305 – to 1MB RAM Upgrade £30
- **R312**-A305/310 – to 2MB RAM Upgrade £85
- **R314**-A305/310 – to 4MB RAM Upgrade £229
- **R412**-A410/1 – to 2MB RAM Upgrade £25
- **R413**-A420/1 – to 4MB RAM Upgrade £50
- **R414**-A410/1 – to 4MB RAM Upgrade £75
- **R810**-A410/1 – to 8MB RAM Upgrade £399
- **R820**-A420/1 – to 8MB RAM Upgrade £375
- **R840**-A440/1 – to 8MB RAM Upgrade £315
- **A5000** – to 2MB additional RAM Upgrade £82

Desk Top Publishers

Acorn's Archi DTP Package	£69
• Equasor £39; • Expression-PS	£19
Impression 2 DTP Pack	£123
Impression Junior	£65
Impression Business Supplement	£39
Impression II Borders Disc	£19
Ovation DTP	£85
Desk Top Thesaurus	£18

Archi Wordprocessors

Pendown Archi	£48	Easiwriter	£115
Pendown Plus	£68	EasiWord	£45
Pipedream Spell Checker	£40	Prime Word	£52
Graphic Writer	£20	Wordz	£85

DATABASES

Flexifile	£69	Multistore v2.01	£99
Knowledge Organiser	£42	Pinpoint	£65
Magpie	£40	Pinpoint Junior	£23

SPREADSHEETS

Eureka	£99	Schema	£89

BUSINESS GRAPHICS

GammaPlot	£39	Sigmaplot	£39

INTEGRATED PACKAGES

- Pipedream 3 £116 • Pipedream 4 £146
- Desktop Office – Database, Graphs & Charts, Wordprocessor Spreadsheet, Communications £69
- Desktop Folio – Wordprocessor, Desktop & Interactive Publishing. Ideal for school £59
- Acorn Advance package £99

Acorn Multimedia

- Multimedia Expansion £499
- Multimedia Expansion + 16 bit SCSI £599

Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.
Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine.
A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.
By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

A300/A400 Internal IDE Drive

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	£189
ADA 0550	80Mb	17mS	£239
ADA 0530	100Mb	16mS	£259
ADA 0570	200Mb	15mS	£369
ADA 0880	330Mb	15mS	£599

All above 3.5" Drives are supplied complete with Controller Card & cable for use with A300/A400/A500 series machines.

AAA 0300 External Case & PSU for A3000 £85
AEA 1060 Archi IDE Hard Disc Podule only £89

A5000 Internal IDE Drive

ADA 1030	80Mb	17mS	£189
ADA 0940	100Mb	16mS	£195
ADA 0950	200Mb	15mS	£275
ADA 0580	330Mb	15mS	£525

A5000 2nd Internal IDE Hard Drive

ADA 1040	80Mb	17mS	£195
ADA 0960	100Mb	16mS	£205
ADA 0970	200Mb	15mS	£285
ADA 1010	330Mb	15mS	£535

A3000 External IDE Drives

ADA 0780	44Mb	28mS	£254
ADA 1020	80Mb	17mS	£305
ADA 1050	100Mb	15mS	£324

Internal Hard Disc Drives for A3000/A3010

State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0150	20Mb	19mS	£149
ADA 0770	30Mb	19mS	£185
ADA 0750	60MB	18MS	£259
ADA 0720	80Mb	18mS	£299
ADA 0730	120Mb	16mS	£395

Supplied ready assembled. No soldering required. Simply plug into the allotted space.

Archi IDE Hard Cards

"Simply plug and play"

Watford's easy to instal, low cost, high performance, revolutionary IDE Hard Cards for the A300 & A400 series Archimedes.

ADA 0650	20Mb	19mS	£159
ADA 0800	30Mb	19mS	£195
ADA 0660	40Mb	28mS	£289
ADA 0890	60Mb	18mS	£299
ADA 0670	80Mb	18mS	£309
ADA 0680	120Mb		£405

(All above Hard Cards can be used as Removable Hard Drives. Ideal for Military and Education use.)

Archi to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.

- Risc OS 2 Version £15
- Risc OS 3 Version £16
  (P.S. For A3000 Serial Upgrade **(£19)** required)

A3000 Accessories

- 3.5" External Drive £95
- Monitor Stand £15
- Technical Manual £39
- Serial Upgrade £19
- A3000 Dust Cover £5
- Micro+monitor cover £9
- Acorn Carrying Case for A3000 £10
- A3000 User Port/Midi Upgrade Card £44
- A3000 User/Analogue/IIC I/O Card £38
- A3000 External Podule Case £15

A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

Features

- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices. **£38**

Cortian CKAI Interface

Eliminates need to have a User port in A3000/305/310/400/540 when using Concept Keyboard. £28

Concept Keyboards

- A4 Standard Pack £89
- Primary Pack £95
- A3 Standard Pack £94
- Primary Pack £99
- A4 Designer Pack £104
- A3 £104
- Universal 2010 Keyboard A3 £107
- Universal 2010 Keyboard A4 £104

Leasing finance at very attractive rates now available to Businesses (subject to status), Schools, Colleges, Universities, Government Depts. and Local Councils. Minimum order £1,000. Please telephone for details.

Archimedes External Disc Drive Interface

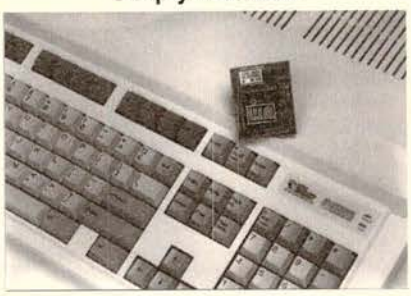
With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.
Price £21

Back Plate Extension

- A300/400 £15; • A3000 £14

ARM 3 Turbo Card MkII

Simply The Best



Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £145. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.
Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £24.
(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

Special Offer £135

Network Accessories/Software

BBC B Econet Kit	£42
Master Econet Module	£40
Archimedes Econet Module	£40
A3020/4000 Econet Module	£49
Acorn A4 Econet Module	£50
Archimedes Ethernet Card	£139
A3020/4000 Ethernet Card	£179
AUN/Level 4 Fileserver	£379
Econet Starter Kit	£137

(P.S. Full range of Network Accessories/Software/ Site Licences available. Telephone for details.)

Schools and Colleges
Trade in any computer for £60 or £110 when purchasing selected Archimedes micros.
Call for details.

Continued→ → → → → → → → →

BBC Education Software

A vous la France	French programs for beginners	£29
Au restaurant/Accident de route	French games for 12 years +	£26
Bolougne and oh les	French program for beginners	£26
Computer control	Program simulating computer control	£26
Computers at work	Primary education program	£17
Espana Viva	Spanish educational programs	£20
Folks Tales	Listening and reading for ages 7+	£22
Geordie Racer	Look and read for ages 7+	£22
Hall of Mirrors	Practice word & number skills	£22
Help your child learn basic mapwork 2		£18
Inside Science	Four common science subjects	£22
Letters and pictures	Educational programs for 6-8 years	£15
Make a wildlife garden	Explore wildlife/weather/garden growth	£22
Maths with a story 1	Primary level maths programs	£20
Maths with a story 2	4 further maths programs	£20
Note invaders	Learn sheet music for 7-Adults	£15
Numbers & Pictures	Early number learning (4-6 years)	£15
Picture craft	Geometrical design & Colouring	£17
Puncman 1 & 2	Learning Punctuation (7-13 years)	£15
Puncman 3 & 4	Learning Punctuation (8-14 years)	£15
Puncman 5, 6 & 7	Learning Punctuation (8-15 years)	£15
Ramayana Tales	Simple Desktop Publisher using pictures & characters from the Ramayana	£22
Skyhunter	Look and read educational adventure	£22
Technology and design	Problem solving programs	£22
Through the dragons eye	Adventure game and Map reading	£22
Fun School 3 (Under 5)	Varied range of Education subjects	£17
Fun School 3 (5-7)	Varied range of Education subjects	£17
Fun School 3 (Over 7)	Varied range of Education subjects	£17

Archi Educational Software

- 10 out of 10 Early essentials £20
- 10 out of 10 English £20
- 10 out of 10 Maths £20
- Animated Alphabet (3-6 yrs) £21
- Arcventure (8-12 yrs) £29
- Bookbinder £43
- Bumper Disc £14
- Bumper Disc 2 £14
- Craftshop 1 £19
- Craftshop 2 £19
- Converta-Key £16
- Data Word £16
- Desktop Stories £35
- DigiSim £35
- Dream Time (5-7 yrs) £23
- Farm (5-7 yrs) £19
- Fleet Street Phantom (9-13 yrs) £25
- Fun School 3 Red (up to 6 years) £17
- Fun School 3 Green (6-8 years) £17
- Fun School 3 Blue (8 years +) £17
- Gate Array Teaching System £68
- Glimpse Clip Art Utility (7-16 yrs) £8
- Highlighter (6-16 yrs) £42
- Jigsaw £19
- Linkword French £32
- Linkword German £32
- Linkword Spanish £32
- Mapventure (9-13 yrs) £24
- Microbugs £24
- Money Matters £16
- Nature Park Adventure (7-9 yrs) £27
- Numerator £60
- Picture Book £16
- Recall (6-13 yrs) £39
- Sellardore Tales £24
- Snippet £36
- Space Mission Mada (9-13 yrs) –
- Sting of the Dump (9-13 yrs) £22
- Victorians £29
- Viewpoints (9-12 yrs) £33
- Wizard's Revenge (7-10 yrs) £17
- World Map Study £59
- Worst Witch (7-10 yrs) £25

Archimedes Software

GRAPHICS		Pysanki	£14
3D Construction Kit	£39	Quazer	£10
Arc Light	£46	Real McCoy 2	£23
ARCtist	£19	Real McCoy 3	£22
ARCticulate	£19	Redshift	£14
Art Works	£129	Return to Doom	£16
Atelier	£60	Repton 3	£14
Artisan II	£45	Saloon Cars Deluxe	£27
Artisan Gallery	£16	Sim City	£22
Autosketch II	£65	Spitfire Fury	£22
CADet (CAD)	£129	Superior Golf	£14
Clip Art Set 1	£28	Superpool + Break 147	£22
Clip Art Set 2	£28	Swiv	£19
Concept Designer	£23	Talisman	£12
Craftshop 1 & 2	£28	Techodream	£20
Euclid 2	£50	Trivial Pursuit	£22
Graph Box	£59	Twin World	£15
Graphbox Professional	£107	U.I.M.	£23
HotLink Presenter	£40	White Magic 2	£15
Illusionist	£69	Worldscape	£16
Kermit	£46	XFire	£19
Mogul	£17	Zelanites	£23
PCAD Educ.	£395		
Pro Artisan	£70	**Miscellaneous**	
ProCAD	£439	Ancestry	£59
Prime Art	£59	Arccomm 2	£38
Render Bender 2	£79	Arcterm 7	£64
Revelation 2	£80	Armadeus Sound	£60
Titler	£119	Avante Garde Fonts	£23
Tween	£29	Battle Chess	£25
		BBC DFS Reader	£6
GAMES		Broadcaster Loader	£65
Air Supremacy	£17	Chameleon	£34
Apocalypse	£14	Chart Well	£25
Arcade 3 Compilation	£12	Chatter	£34
Battletank	£10	Compression (CC)	£38
Black Angel	£27	Craftshop 1	£27
Boogie Buggy	£14	Craftshop 2	£27
Break 147 + Supa Pool	£19	Desk Edit 2	£29
Bughunter in Space	£12	Equasor	£38
Cataclysm	£19	FlexiFile	£97
Caverns	£10	Genesis	£10
Champions	£25	Genesis Plus	£68
Chess 3D	£16	Genesis 2	£99
Chocks Away	£27	Investigator 2	£22
Compendium	£32	Magpie 2	£42
Chocks Away Extra	£14	Notate	£42
Chuck Rock	£18	Numerator	£66
Conqueror	£15	Pin Point	£65
Cyber Chess	£38	Polyglot	£16
Cycloids	£20	Presenter 2	£29
Ego Repton 4	£–	Presenter Story	£145
Elite	£33	Prophet Accounts	£132
Enter the Realm	£19	Prophet Demo Disc	£10
E-Type Compendium	£20	Rainforest	£17
E-Type Designer	£13	Revelation 2	£95
Fervour	£35	Rhapsody in Blue 2	£45
Galactic Dan	£19	Score Draw	£46
Gods	£24	Show Page	£127
Grievous Bodily Arm	£19	Speech!	£15
Hero Quest	£25	The Victorian	£17
Holed Out Designer	£13	Time Tabler	£499
Holed Out Golf Comp	£20	Toolkit (Clares)	£35
Inter Dictor 2	£26	Touchtype	£40
Iron Lord	£15	Tracker	£39
Jahangir Khan Squash	£19	Turbo Driver BJ10E	£42
Lemmings	£20	Type Studio	£43
Oh no more Lemmings	£15	Vox Box	£46
Lost Temple	POA	Wimp Programmer's Toolkit	£16
Lotus Turbo Challenge	£19	WorldScape	£17
Mad Prof Mariarti	£17		
Masterbreak	£16	**LANGUAGES**	
Man at Arms	£14	Desktop C	£199
MahJong Patience	£15	Macro Assembler	£40
Manchester United II	£19	Robo Logo	£69
Nebullus	£21	BASIC Compiler	£77
Nevryon II	£20	Logotron Logo	£45
Omar Sharif's Bridge	£23	Risc BASIC	£120
Pandoras Box	£18	Risc FORTH	£110
Pipe Mania	£17	Cambridge Pascal	£95
Play It Again Sam	£–		
Populous	£23		

BBC/Master Games

Acornsoft Hits 1	£10	Sim City	£10
Acornsoft Hits 2	£10	Superior Collection 1	£10
Air Supremacy	£10	Superior Collection 2	£10
Play It Again Sam 1	£10	Play It Again Sam 9	£10
Play It Again Sam 2	£10	Play It Again Sam 10	£10
Play It Again Sam 3	£10	Play It Again Sam 11	£10
Play It Again Sam 4	£10	Play It Again Sam 12	£10
Play It Again Sam 5	£10	Play It Again Sam 13	£10
Play It Again Sam 6	£10	Play It Again Sam 14	£10
Play It Again Sam 7	£10	Play It Again Sam 15	£10
Play It Again Sam 8	£10	Play It Again Sam 16	£10

Archimedes Fonts

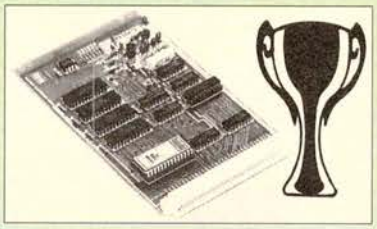
	Risc OS 2	Risc OS 3
Allegro	£12	£17
Asia	£7	£10
Basia	£9	£12
Briony	£10	£15
Caxton	£24	£35
European 3	£28	£40
Griffo 2	£27	£40
Olivia	£24	£35
Peters	£24	£35
Simple	£24	£35
Swiss Inserat	£5	£7
Yates	£10	£15

TEX EPROM ERASERS

Over erasure of EPROMs very rapidly turns them into ROMs!
The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast.

- **ERASER GT** – Deluxe version erases up to 8 chips. Has automatic safety cut-off to switch off the UV lamp when opened. £36
- Spare UV tubes. £12

Archi Real-Time Digitiser



Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £75

A Set of Colour Filters for colour image grabbing using a video camera £16

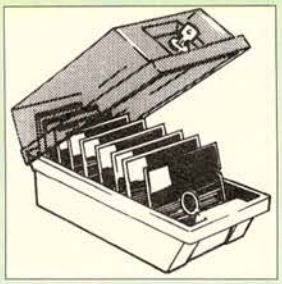
Archi Graphic Tablet

Special Price £199

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra £20

Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus £105

Antistatic Lockable Disc Storage Units



- **M35** – holds up to 50 5.25" discs **£4.95**
- **M85** – holds up to 95 5.25" discs **£6.95**
- **M25*** – holds up to 25 3.5" discs **£4.95**
- **M50** – holds 50 3.5" discs **£6.50**
- **M100** – holds 100 3.5" discs **£6.99**
- **M10** – holds 8 of No. 10 Data Cartridges **£15**

* Not lockable

Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

£2

3M – Diskettes

Lifetime warranty on 3M Discs

- *10 x 5.25" S/S D/D 40T (744)* **£5**
- *10 x 5.25" D/S D/D 40T (745)* **£5**
- *10 x 5.25" S/S D/D 80 Track (746)* **£6**
- *10 x 5.25" D/S D/D 80 Track (747)* **£7**
- *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT* **£8**
- *10 x 3.5" S/S D/D 40/80 Track* **£6**
- *10 x 3.5" D/S D/D 40/80 Track* **£6**
- *10 x 3.5" Double Sided High Density* **£10**

Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- *10 x **M3** 3.5" D/S D/D 80 Track* **£6**
- *10 x **M9** 3.5" D/S High Density* **£10**
- *10 x **M4** 5.25" S/S D/D 40 Track* **£5**
- *10 x **M5** 5.25" D/S D/D 40 Track* **£5**
- *10 x **M7** 5.25" D/S D/D 80 Track* **£6**
- *10 x **M8** 5.25" D/S H/D Hi-Density* **£9**

Special Bulk Offer Discs

(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£25	£30	£35
• With Sleeves 5.25"	£28	£33	£38
• 3.5" D/S D/D	£21 for 50	£39 for 100	
• 3.5" D/S H/D	£40 for 50	£75 for 100	

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00**; Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

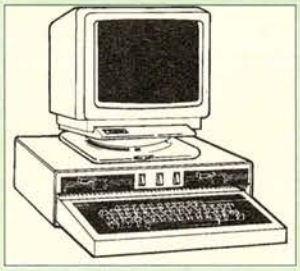
3.5" Disc Drive

These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	**£59**
• **CLD35:**	Twin Disc Drives, 800K	**£109**
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	**£82**
• **CD35:**	Twin Disc Drives, 800K	**£126**

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drives in Monitor Stand



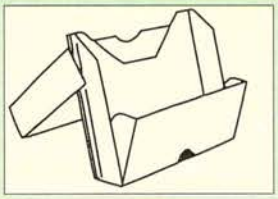
• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£150

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£145

Plastic Library Cases



DLC1 – Holds 5 x 3.5" Discs. **£1.50**
DLC2 – Holds 10 x 3.5" Discs. **£1.90**
DLC3 – Holds 5 x 5.25" Discs. **£1.60**
DLC4 – Holds 10 x 5.25" Discs. **£2.00**

Disc Albums

Attractively finished in leather-look PVC Vinyl

DW1 – Holds 6 x 3.5" Discs **£2.50**
DW2 – Holds 6 x 5.25" Discs **£3.00**
DW3 – Holds 20 x 5.25" Discs **£3.50**
DW4 – Holds 40 x 3.5" Discs or 5.25" Discs **£4.50**

Cleaning Kits

- 5.25" Disc Cleaning Kit **£4**
- 3.5" Disc Cleaning Kit **£4**
- PC Cleaning Kit **£7**
- Professional PC Cleaning Kit **£12**
- Aerosol Dust Spray Can **£3**
- Servisol Foam Cleaner Can **£3**
- Antistatic Aerosol Spray **£3**

Acorn & Watford DFSs

- Watford sophisticated DFS ROM **£16.00**
- Watford DFS Kit complete **£49.00**
- DFS Manual (comprehensive) **£6.95**
- Acorn DNFS ROM **£17.00**
- Acorn ADFS ROM only **£25.00**
- Acorn 1772 DFS ROM Kit **£49.00**
- Acorn DFS Kit complete **£48**

Watford's MkII 1772

Single/Double Density DFS

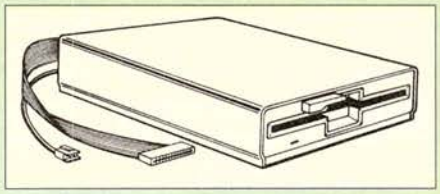
Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

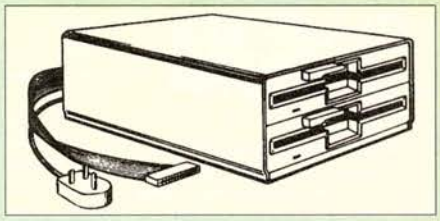
- Complete Kit Special Price **£44**
- DDFS Manual (No VAT) **£6.95**

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).
P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"





Our Disc Drives conform to BS415

Type	Description	
	Disc Drive without PSU	
• **CLS400S:**	Single, 40/80 track 400K Double sided Drive	**£70**
• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£138**
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	**£80**
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£149**

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

Continued→ → → → → → → → →

Microvitec Monitors

- **1431** – Standard Resolution #£175
- **1451** – Medium Resolution #£215
- **Cub3000** Medium Res for A3000 #£195
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239
- **Touchtec 3000** £–

3 years parts & labour warranty

Multiscan Monitors

Eizo T240i	£589	Panasonic C1381	£199
Eizo F340i-W	£625	C1381LR	£270
Eizo F550i	£899	Taxan 787	£215
Eizo T560iT	£1345	Taxan 787LR	£239
Eizo T660i-T20"	£1899	Taxan 789LR	£289
Eizo 9060	£499	Taxan 795-PC	£465
NEC 2A-N	£274	Taxan 875+ LR	£739
NEC 3FG	£360	Txn1075-20"	£1189
NEC 4FGe	£517	Taxn1150	£1699
NEC 5FG	£877	Taxn2013LR	£1045
NEC 6FG	£1739		

Panasonic monitors carry 2 years on-site maintenance warranty

Aries AlphaScan Monitor

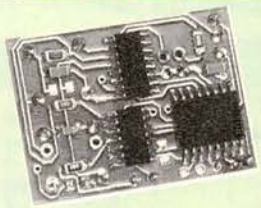
Its multiscan circuitry provides automatic adjustment for frequencies between 31 and 56KHz horizontal, and 43 and 70Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes. **£299**

- Aries Alphascan 17" Plus £585

Philips Monitors

- **BM7502** 12" Hi-res Green £88
- **CM8833** 14" Med. Res Colour £195
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

VIDC Enhancer



Our two unique VIDC add-on boards for the Archimedes cater for all VGA and Multiscan monitors and screen modes. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

Super VGA VIDC Card: Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control **£35**

MultiVideo VIDC Card: As above but for MultiScan monitors only. **£19**

Plotters

- DXY1100 £550
- DXY1200 £715
- DXY1300 £935
- Sketchmate A4 £319
- Sketchmate A3 £455
- Roland Plotter Fibre Tip Pens £7.50
- HP7440AU £665
- HP7475AU £899
- HP7570A £199
- HP7575AU £2529

Printer Leads

- BBC Centronics 4' £5; 6' £6
- Archi Parallel 2m £5; 5m £9; 10m £13
- PC Parallel 2m £5; 5m £9; 10m £13
- 25 pin D Male/Male 2m £5; 5m £10
- Centronics Double Ended 4' £5; 6' £6; 5 meter £10; 10 meter £14
- RS232 Leads Various £POA

Integrex Ink Jet Printers

- Colour Jet 132 Printer £425
- Paper Roll £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £21
- Black Cartridge £12.40
- 100 A4 OHP transparencies £55
- 8K Serial Interface Optional £123
- Colour Jet 2000 £599
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43
- Integrex Colourjet Series 2 £335
- Auto Sheet Feeder for Series 2 £45

Star Printers

	Printer	CSF	Ribbon
LC15	£190	£135	£5
LC20	£102	£60	£4
LC100C	£126	£65	£9
LC24-15	£245	£135	£5
LC24-100	£143	£69	£5
LC24-20 Mk2	£175	£65	£5
LC24-200C	£214	£65	£12
LC200 C	£151	£65	£12
Star Jet	£169	£43	£16
XB24-200C	£324#	£80	£12
XB24-250C	£389#	£139	£12
ZA-200C	£260#	£89	£12
ZA-250C	£324#	£139	£12

Includes 12 months on-site warranty

- Black Ribbons for Colour Printers £5
- Serial 8K I'face LC10/15/24/200 £52
- 32K Buffer LC/XB24-10; 15; 200 £52
- Star/Archi Colour Printer Driver £15

NEC Pinwriter Printers

	Printer	CSF	Ribbon
P220	£181	£59	£6
P32	£235	£59	£6
P62	£320	£89	£8
P72	£395	£115	£8
P90	£577	£115	£8

- Jetmate J400 £169; • Jetmate J800 £249

- Black Ribbons P20; P32 £6
- Ribbons P60/70/P90 Black £8; Colr £14
- P60/70 Colour Option Kit £59
- CSF for P20 £59; P60 £89; P70 £89

Panasonic Printers

	Printer	CSF	Ribbon
KX-P1123	£126	£59	£6
KX-P1170	£98	£59	£6
KX-P1624	£264	£126	£8
KX-P1654	£330#	£126	£8
KX-P1695	£267	£126	£8
KX-P2123M	£144	£79	£8
KX-P2123C	£194	£79	£15
KX-P2124	£215	£89	£8
KX-P2180M	£126	£79	£8
KX-P2180C	£143	£79	£15
KX-P2624	£269#	£126	£8

Includes 12 months on-site warranty

- Dustcover for 80 column printers £6
- Serial Interface for above Printers £46
- Black Ribbons for P1081, 1180, 1124 £6
- Brown, Blue or Red Ribbons for KX-P1081/1592/1595/1695 £9 each
- 32K Buffer for above Printers £16

P.S. We only sell original Panasonic Ribbons which are guaranteed to last 3 million characters

Laser Printers

All Laser printers (excluding HP Lasers) include 12 Months On-Site maintenance

Brother HL4-VE	4ppm	£594
Brother HL4-PS Postscript	4ppm	£974
Brother HL-10V	10ppm	£1045
Brother HL10-PS	10ppm	£1329
Brother HL10-DV	10ppm	£1149
Brother HL10-DPS	10ppm	£1445
Canon LBP4 LITE	4ppm	£525
Canon LBP4+ 1.5M RAM	4ppm	£644
Canon LBP-8111 Plus	8ppm	£945
Canon LBP-8 Plus IIIR	8ppm	£1435
Canon LBP-8 IV 600DPI	8ppm	£989
Epson EPL-4000	6ppm	£445
Epson EPL-5200 – NEW –	6ppm	£565
Epson EPL-7500 PS	6ppm	£1139
Epson EPL8100	10ppm	£920
Fujitsu VM600	5ppm	£579
Fujitsu VM800 (Best Buy)	8ppm	£535
HP Laserjet IIISI	16ppm	£POA
HP Laserjet IIISI PS	16ppm	£2469
HP Laserjet IIIP	4ppm	£625
HP Laserjet 4	8ppm	£1073
HP Laserjet 4L – NEW –	4ppm	£499
HP Laserjet 4M PS	8ppm	£1449
HP Laserjet 4si		£2260
HP Laserjet 4Si MX 1200 DPI	16ppm	£3385
NEC Silentwriter S62P PS	6ppm	£995
NEC Silentwriter S102	6ppm	£1075
NEC Silentwriter2 290		£1194
NEC Silentwriter 290P PS	8ppm	£1469
OKI OL400E	4ppm	£449
Panasonic KX-P4410	5ppm*	£459
Panasonic KX-P4430	5ppm*	£594
Panasonic KX-P4451	11ppm*	£919
Panasonic KX-P4455	11ppm*	£1294
Star LP-4 Post Script	4ppm	£774
Star LS-5	5ppm	£489
Star LS-5 EX (RISC Based)	5ppm	£599
Star LS-5 TT True Type+Mac	5ppm	£775
Star LP-8 III	8ppm	£899
Star LP-8 Star (post)script	8ppm	£1130

*2 years on-site warranty

HP Laserjet IIIP 3 years on-site	£150
HP Laserjet IIISi 3 years on-site	£450
HP Laserjet 4/4M 3 years on-site	£170

Laser Toners

Canon 2, 3 & 4	£52	KX-P4420/50/55	£20
Epson GQ	£12	KX-P4410/30	£29
EPL 40/41/4300	£55	NEC SWriter	£84
EPL 71/7500	£117	HPII/D, III/D	£60
EPL 8100	£117	HP IIP, IIIP	£54
Qume Crystal(3)	£84	HP4/4M	£72
Star LP4	£52	OKI OL400/800	£18
Star LS5	£69	VM800 8K pages	£99
Canon 8/Star LP8	£59		

Laser RAM Upgrades

Type	1M	2M	4M	
IIP; IIIP	£49	£80	£132	
II & IID	£60	£96	£142	
LJ4/4M	£–	£75	£175	8M/£279
EPL4100	–	£120	–	512K/£52
KX4420/50i	£59	£89	£149	
NEC S62/S102	£99	£180	–	
Star LBP	£139	£275	–	

Jetpage Postscript Cartridge

- HP IIP/IIIP £225 • IID & III £227

Various Add-Ons

- Laserjet Appletalk Interface £135
- HP Adobe Postscript+ Cartridge £359
- Pacific Page Postscript £259
- HP Premier Font Collection £28
- Laserjet Various Font C'tridges from £45
- HP Postscript Module for LJ4 £270
- Laserjet 4 Powered envelope feeder £199
- Jetdirect Ethernet Card for Laserjet IIIsi/4/4Si £359
- 500 Sheet paper cassette (3rd Bin) £205
- HPIIP/IIIP Lower Cassette Tray £96
- Canon LBP-4 Lower Cassette Tray £96

Citizen Printers

120D+	£98	Swift 90C	£198
Swift 9	£145	Swift 200	£178
Swift 9X	£185	Swift 240	£200
PN-48	£189	Swift 240C	£212
Swift 90	£139		

2 years parts and labour warranty on all above Citizen Printers.

- Swift 24 Ribbons: Black £4 Colour £13
- Cut Sheet Feeder for 80 col. printers £75
- Citizen 120D Ribbons £3.50
- Archi Colour Printer Driver £15

Hewlett-Packard Printers

Desk Jet 500	£249	DJ500 colour	£355
DJ 550 Colour	£459	Desk Jet 510	£253
DJ Portable	£269	Desk Jet 1200C	£1060
Deskwriter 500C	£349	Deskwriter 550C	£459
Paint Jet	+£495	PaintJet XL300+	£1549
Quiet Jet plus	£399	PaintJet XL300PS	£2620

+ Includes 12 months on-site warranty

3 years on-site maintenance available as follows:

DeskJet & DeskWriter mono	£55
DeskJet & DeskWriter colour	£65

- Paintjet Cartridge Black £15; Colour £23
- DJ Portable CSF £49; Carrying Case £49

Special Offer

When you purchase any Hewlett Packard printer from us, you qualify for the following software offers:

- Adobe Type Manager v2 £45
- Designworks Software pack at £39
- Lotus Organiser Software at £39

Desk Jet 500 Accessories

- Ink Cartridges Black £16; Colour £23
- High Capacity Ink Cartridges Black £21
- Ink Refill Double Pack (JetFill) £10
- Ink Refill High Capacity (JetFill) £16
- Archi – DJ550 Colour Printer Drive £15
- Epson FX Emulation Cart.(500 mono) £45
- IBM Proprinter Emulation Cartridge £59
- Wordperfect Cartridge £89
- DJ 500 Dust Covers £6
- 636G 50 x Transparencies A4 £40
- 636J 50 x Glossy Paper A4 (also XL) £40
- 630Z 50 x Cut Sheet Paper A4 £15

Plug In Font Cartridges for DJ 500

22706B - Prestige, Elite, Line Draw	£55
22706C - Letter Gothic & HP Line Draw	£56
22707P - Proprint Emulation Cartridges	£57

HP Paintjet/XL Accessories

- 630P 200 Z-Fold paper 8.5 x 11 £14
- 630Q 50 Transparencies 8.5 x 11 £39
- 630S 50 Transparencies A4 £40
- 630Y 200 Cut Sheets 8.5 x 11 £14
- 631Y 200 Cut Sheets A4 £18

Fujitsu Printers

- B-100 InkJet – HP Deskjet compatible 300dpi, whisper-quiet & 6 resident fonts #£159
- B-200 InkJet – HP Desk Jet compatible 300dpi. Built in Cut Sheet Feeder. Optional 2nd Bin/Tractor available #£239
- DL-1150 Dot Matrix – 24 pin, 110 column Colour optional £209
- DL-1150colour Dot Matrix – 24 pin, 110 column With colour option £235
- DL1250 £344; • DL4600 £799
- DL3600 £439; • DL5800 £999
- Joywriter £249; • DL1250 colr £344
- B-100 Cut Sheet Feeder £65
- B-200 2nd Bin Sheet Feeder £95
- B-200 Tractor Unit £65
- B-100/200 Ink Cartridges £14
- DL-1100 Colour Upgrade £39
- DL-1100 Ribbons Black £5 Colour £11

Epson Printers

	Printer	CSF	Ribbon
EX1000C	£428	£–	£6
FX870	£273	£47	£4
FX1170	£339	£69	£6
LQ100	£148	£–	£4
LQ570+	£205	£47	£4
LQ870	£359	£47	£6
LQ1060	£585	£155	£6
LQ1070	£310	£69	£6
LQ1170	£434	£69	£6
LQ2550	£673	£360	£6
LX100	£116	£–	£4
LX400	£94	£69	£4
LX850+	£135	£69	£4
LX1050	£203	£125	£6
SQ870	£409	£59	£23
SQ1170	£560	£155	£23
SQ2550	£669	£–	£23
Stylus 800	£244	£–	£10

Epson RS232 Interface

Standard **£28;** +8K Buffer **£75**

- LQ100 Tractor Feed **£29**
- FX850/LQ800/850 Tractor Feed **£69**
- FX/LQ1050 Tractor Feed **£85**
- LQ2500/2550 Tractor Feed **£90**
- Dustcovers for 80 col printers **£6**

Canon Bubblejet Printers

	Printer	CSF	2nd Bin	Ink Cart
BJ10EX	£156	£43	–	£16
BJ10SX	£169	£43	–	£16
BJ200	£275	–	–	£16
BJ230	£299	–	–	£16
BJ300*	£319	£88	£88	£12
BJ330*	£369	£110	£79	£12
BJC800C	£1345	–	–	£16

- BJ10EX/SX Jumbo Ink Refill pack (twice cartridge volume) **£12**
- Spare Battery pack for BJ10EX **£33**

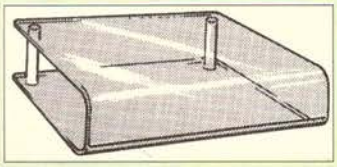
* includes 12 months on site warranty

Professional Printer Stand

The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £19
132 Column version £29

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version **£16** (carr £3)

136 Column version **£20** (carr £4)

24-Hour Credit Card Order Line (0923) 233383 or 250234

Universal Printer Sharers

Connect up to 4 Micros to 1 printer or 4 Printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Sharers

Connects	Serial	Parallel
2 to 1	£10	£10
3 to 1	£14	£15
4 to 1	£19	£20

Professional Sharer Units

Connects	Serial	Parallel
2 to 1	£15	£16
3 to 1	£20	£23
4 to 1	£30	£34

Auto Printer Sharer Switch

Connects	Serial	Centronics
2 to 1	£34	£36
4 to 1	£52	£53
8 to 1	–	£85

256K Multi Spooler

These Parallel Auto printer sharer switches have built-in 256K Buffer.

- 2 In / 2 out **£125** • 4 In / 2 out **£139**
- 8 In / 1 out **£185**

(Cables for all printer switches are from £5 each please specify the type required when ordering.)

Compact Converter Unit

Serial to Parallel & Parallel to Serial **£32**

Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold Paper **£7**
- 2,000 Sheets 9.5" x 11" Fanfold Paper **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold **£21**
- 1,000 Sheets 15" x 11" Fanfold Paper **£9**
- 2,000 Sheets 15" x 11" Fanfold Paper **£16**
- 1,000 Sheets true A4 Fanfold Paper 70gms **£11**
- 2,000 Sheets true A4 Fanfold Paper 70gms **£21**
- 500 Sheets A4 80gms Bond **£3.50**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

Commander Joystick

Features:

- Direct connection to BBC Analogue input port –
- Fully compatible with all BBC Joystick controlled games programmes.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

Price: £15

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	£6.00
1,000 90 x 36mm (Twin Row)	£6.25
1,000 90 x 49mm (Twin Row)	£7.50
1,000 102 x 36mm (Twin Row)	£6.75

Laser Printer Labels on A4 Sheets

3750 – 70 x 29mm (3 Rows x 10)	£15.50
2400 – 70 x 37mm (3 Rows x 8)	£15.25

Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold **£7**
- 2,000 Sheets 9.5" x 11" Fanfold **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part **£21**
- 1,000 Sheets 15" x 11" Fanfold **£9**
- 2,000 Sheets 15" x 11" Fanfold **£16**
- 1,000 Sheets true A4 Fanfold 70gms **£11**
- 2,000 A4 Fanfold Paper **£19**
- 500 Sheets A4 80gms Bond **£3.50**

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	–	£6.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£3.25	£6.00
EX800/1000	£6.00	£6.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£6.00	£6.00
LQ400/500/550/800/850	£5.50	£6.00
LQ1050/LQ2500	£12.00	£6.00
LX400/800/850	£3.50	£6.00
M1009/GLP	£2.95	£6.00
NEC P2200	£4.50	£6.00

Dust covers for most 80 column printers available at £6 each

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Type

Connects	Serial	Parallel
2 to 1	£10	£10
3 to 1	£14	£15
4 to 1	£19	£20

Professional Type

Connects	Serial	Parallel
2 to 1	£15	£16
3 to 1	£20	£23
4 to 1	£30	£34

Cables from £5 each (see cable section)

Auto Printer Sharer

Connects	Serial	Parallel
2 to 1	£34	£36
4 to 1	£52	£53
8 to 1	–	£85

Compact Converter Units

Serial to Parallel	£32
Parallel to Serial	£32

Voltmace Joystick

Delta 3B Single Joystick	**£10**
Delta 3B Twin Joysticks	£15
Delta 14B Single Joystick	£11
Delta-Cat A mouse eliminator	
Joystick for the Archimedes	£24
Analogue aircraft style yoke	
Joystick to run in the analogue port of the BBC B & Master 128	£25

Beeb PC (BASIC)

Designed for program authors to convert BBC programs to run on IBM PCs.

Price: £38

256k Multi Spooler

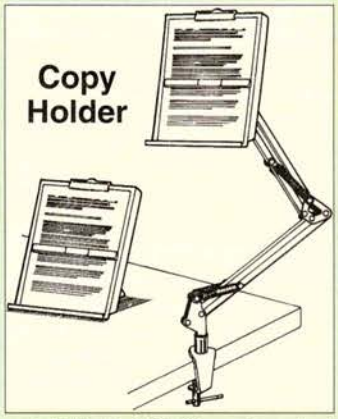
These Auto Parallel Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

- 2 In/2 out **£125** • 4 In/2 out **£139**
- 8 In/1 out **£185**

Plinths for the BBC Master and A3000

- Single 490 x 310 x 105mm **£14**
- Double 490 x 310 x 210mm **£27**
- A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive **£15**

Copy Holder



Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip.

• Desk Top **£8;** • Angle Poise **£12**

NEW

Copy holders as above but with a battery operated, remote controlled cursor/ruler. (By hand or foot pedal.) (Batteries 2 x AA not included.)

• Desk Top **£15;** • Angle Poise **£20**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightning or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket

4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required.
Very useful for tidying up all the mains leads from your peripherals. **£9.50**

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System **£16**

Continued→ → → → → →

QUEST MOUSE Mk III

- Quest Mouse III & Quest Paint **£39**
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont **£59**
- Quest Mouse III only **£25**
- Quest Paint Software only **£23**
- Quest Font Disc (22 Text Fonts) **£15**
- Quest Mouse Mat (Red or Blue or Green please specify) **£3**
- Conquest (Quest Paint Extension) ROM **£24**
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer **£18**

(P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose **£3**

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. **£15**

Mk III AMX MOUSE

- **AMX Mouse plus Super Art £39**

(Please specify for BBC, Master or Compact)

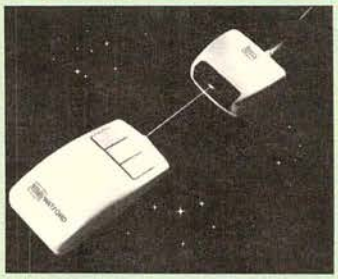
- AMX MOUSE ONLY **£25**
- AMX SUPERART Package **£20**
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse **£18**
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker **£13**
- AMX DESIGN (ROM) **£23**
- AMX EXTRA EXTRA **£16**
- MOUSE MAT **£3**

WE Mouse House

Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

Archi Cordless Mouse



Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 minutes inactive
- Auto Power Shut-Down after 20 minutes inactive

Price £29

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.

QT-10 BBC/Master Version **£25**
QT-20 Archimedes Version **£26**

Beeb Hand Scanner

Watford Beeb HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs!

Beeb HandScan & Firmware £99

Archi Mk II Hand Scanner

Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion podule. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines. Images can be printed on any printer supported by RISC OS.
On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

AHS-4 Archi 300/400 Version £109
AHS-3 Archi A3000 Version £119

Award winning Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Wapping Editor Software Pack £39
Wapping Editor plus Mouse £59

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc. Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out. **£15**

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are two Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions. **£12**

Wapping Font Disc 2

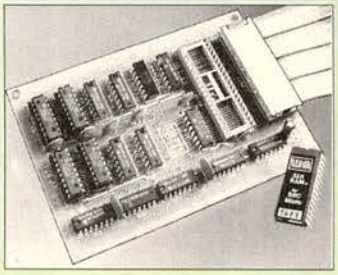
This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). **£13**

Archi A4 Scanner

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures. Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

Archi A4 Scanner	**£239**
Sheet Feeder for above	**£75**
Scanner + Sheet Feeder	**£309**

32K Shadow RAM/ Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

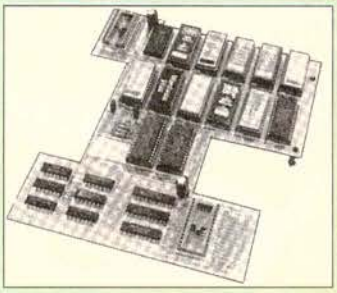
Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.

- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.

Only £49

Solderless Sideways ROM Socket Board



- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £32
Battery Backup fitted **£35**
Battery Backup only **£3**
16K Sideways RAM **£8**

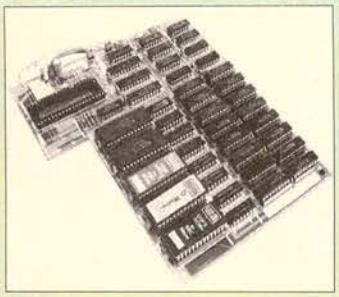
- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer. **Only: £8**

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below). **£14**

Watford POWER DUCK £8

ROM/RAM Card



- No Soldering required to fit the board.
- Compatible with BBC B
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).

PRICES:

- ROM/RAM card with 32k DRAM **£39**
- ROM/RAM card with 64k DRAM **£52**
- ROM/RAM card with 128k DRAM **£83**

OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit **£8**
- 16k DRAM for Upgrade **£13**
- Battery backup **£3**
- Read and Write protect switches **£2 each**

Complete ROM-RAM card with all options fitted **£99**

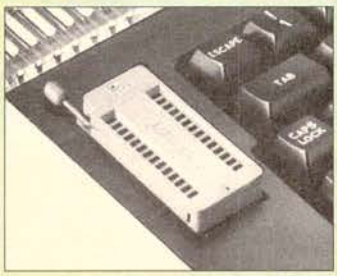
ROM Cartridges for the BBC Master

Will accept the larger Piggy Back ROMs like Interword, Quest, etc.

• Twin **£9;** • Quad **£14**

24-Hour Credit Card Order Line (0923) 233383 or 250234

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without having to open the lid. The ZIF socket is located into the ROM Cartridge's position. It is very simple to install. No soldering required. Also included in the price is a plastic see through storage case with antistatic lining, which allows you to store 12 ROMs. **£18**

Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

Special Offer £10

Computer Concept's ROMS

InterBase	**£49**	InterChart	**£25**
InterSheet	**£37**	InterWord	**£36**
Mega-3 ROM	**£76**	Spell Master	**£42**
Wordwise Plus			**£38#**

Price includes a FREE Wordaid Rom

Word-Aid

This advance utilities ROM extends the power of your Wordwise plus ROM.

Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Acorn ROMS

View 3.0 ROM	**£45**
Viewsheet (Acornsoft)	**£36**
Viewstore	**£36**
Viewspell – 80T disc	**£25**
View-Index	**£12**

View Printer Driver ROM

View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

Price: Only £29

User Port Splitter Unit

Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows you to connect two devices simultaneously to the BBC B & Master user port.

Excellent Value at **£22**

Assorted ROMS

ACORN ADFS	**£25**
ACORN BASIC 2 plus User Guide	**£22**
ACORN DNFS	**£17**
Acorn OS B+	**£25**
Acorn OS 1.2	**£14**
Beebmon	**£22**
Dump Out 3	**£25**
Graphics Extension Rom	
GXR-B	**£21**
GXR-B+	**£22**
Logotron LOGO	**£43**
MASTER OS ROM	**£38**
Master ULA (47)	**£15**
Master ULA (60)	**£10**
Numerator – Archi	**£69**
Numerator – BBC	**£39**
Pendown ROM	**£32**
SERIAL ULA	**£13**
TED	**£15**
Video ULA	**£14**
1Mb OS ROM	**£39**

OFFICE MASTER

• CASHBOOK • FINAL ACCOUNTS • MAILIST • EASILEDGER – • INVOICES & STATEMENT

All this for only **£21** (Disc)

OFFICE MATE

• DATABASE • SPREADSHEET • BEEBPLOT

Only £10 (Disc)

BOOKS (No VAT on Books)

15 Hr Wordprocessing BBC/View	£6.95
15 Hr Wordprocessing BBC/WW & WW+	£6.95
30 Hour BASIC (BBC Micro)	£12.95
1st Word Plus – Mastering	£13.95
1st Word Plus Rel. 2 Manual	£10.00
A3000 Technical Reference Manual	£29.00
A5000 Technical Reference Manual	£–
Acorn DTP A Guide to	£17.00
Advanced User Guide for BBC	**£10.95**
Archimedes 1st Step – Beginners Guide	£9.95
Archimedes Assembly Language	£14.95
Archimedes Basic V Guide	£9.95
Archimedes BBC Basic Guide	£20
Archimedes DTP Manual	£10.00
Archimedes Game Maker Manual	£14.95
Archimedes Operating System	£14.95
Archimedes Risc-Os Programmers Reference Manual	£79.00
Assembly Language Quick Ref.	£21.95
BBC B Micro User Guide	£15
Budget DTP on the Archimedes	£12.95
C Big Red Book of	£8.95
C_Dabhand Guide to 3rd Ed	£16.95
C Programming Lang. 2nd Edition	£24.95
DISC FILING SYSTEM (DFS) Operating Manual for BBC	£5.95
DTP on the Archimedes	£12.95
File Handling for All	£9.95
FORTH on the BBC Micro	£9.95
Graphics on the ARM	£14.95
Impression – Dab Hand Guide	£14.95
ISO-PASCAL Reference Manual	£9.95
Master 512 Guide – Dabs Press	£9.95
Master Operating System	£12.95
Master Reference Manual – Advanced	£14
Mouse User Guide to BBC Micro – the Complete	**£5.95**
Example Programs on Disc for above	**£4.95**
Mysteries of Disc Drives & DFS Revealed	£4.95
PASCAL Programming	£10.95
Risc OS Style Guide	£9.95
RISC Technical Manual 260 pg	£14.95
Understanding Interword – A Beginners Guide	£4.95
View 3.0 User Guide	£10
Viewsheet User Guide	£10
Viewstore User Guide	£10
Wimp Programming for All	£12.95
Wimp Programming –A Beginner's Guide	£12.95
Z88 – A Dabhand Guide	£14.95
Z88 Computing	£9.95
Z88 Magic	£14.95

Spares for BBC Micro

UHF Modulator	**£4**
Speaker **£3;** Speaker Grill	**£1**
Keyswitches	**£1**
16MHz Crystal	**£2**
17.734 MHz Crystal	**£2**
32.768MHz Crystal	**£2**
Replacement 17 way Flexible Keyboard Connector	**£4**
BBC Master Power Supply	**£69**
BBC Master Keyboard	**£62**
BBC Master Casing	**£49**
Refurbished BBC B Spares	
BBC B Casing	**£19**
Clear Perspex Keystrip Holder	**£3**
BBC B Keyboard	**£35**
BBC B Power Supply	**£49**

ACORN to PC

Stop the Confusion!

Do you have to use both Acorn computers and PC's? Would you like to use your Archimedes or A3000 in PC-emulation mode but are unsure of the new commands?

Although Acorn machines (such as the BBC B, the Master, the Archimedes) are mainly used in education, most commercial computers use other operating systems, particularly MS-DOS. As a result school computer users are at a disadvantage when moving into 'business' computing. PCs and other commercial computers use MS-DOS as the operating system, so commands for formatting, copying, backing up, printing and the modem are not the same. Even file names are written differently! And did you know that there is one Acorn command which, if used in MS-DOS, wipes everything in the current directory?

'ACORN TO PC' enables you to change over painlessly. It shows clearly and quickly how, why and where the two systems (Acorn and MS-DOS) differ. As with a foreign language dictionary, you can use the book to transfer either way – from Acorn to MS-DOS, or from MS-DOS to Acorn.

Price: £6.95 (No VAT)

- Official orders accepted from government, educational establishments and PLCs.
- Shop Hours: 9am to 6pm, Monday to Saturday. Late night Thursday until 8pm. Free customer car park.
- Mail Order Inquiries: 9am to 6pm. Monday to Friday only
- Technical Inquiries: 9.30am to 5.00pm, Monday to Friday

Carriage (incl. Insurance) Charges

	1st Item	2nd & Sub-sequent Item
Software	**£6.00**	**£2.00**
Hardware	**£7.00**	**£5.00**
Lasers	**£9.00**	**£7.00**
Accessories	**£5.00**	**£2.00**
Small Items	**£4.00**	**£2.00**

P.S. Many software packages qualify for the small item tariff

For Next Day Working Day delivery service simply double the cost. All charges subject to VAT

Above carriage charges apply to UK mainland only. On export orders, carriage is charged at cost.

Watford Electronics Ltd

Established 1972

Mail Order & Showroom:

Jessa House, Finway, off Dallow Road, Luton, LU1 1TR, England

Tel: 0582 48 77 77 Tlx: 8956095 WATFRD Fax: 0582 488588

Showroom Only:

Jessa House, 250 Lower High Street, Watford, WD1 2AN, England

Tel: 0923 237774 Fax: 0923 233642

Offers and all items are subject to availability. Prices may have to change for reasons beyond our control. Specifications on products are correct at the time of going to press and given in good faith, but may have to change without notice. Please check suitability of peripherals with your system/s, before ordering. All trademarks are acknowledged. Goods are sold subject to our standard terms and conditions of sale and are available on request. GOODS ARE NOT SOLD ON TRIAL BASIS. E&OE.
VAT: UK and EC customers: Please add 17.5% VAT to the total cost, including carriage.

day present
hance to play
th top pianist
derman.
ar-old musician
udition to star
naestro when he
tour at the
Theatre next

uet, two days
mes a teenager,
ringboard to his
e as famous as
as inspired him.
be professional
d travel the
nathan from his
me home. "I
in opportunity
d."
has his grade
and is also an
French horn and
r.
piano teacher
l not teach him
, Richard
ght m

Last week the Express reported on the complaints of management of Edgeley branch was not aware of manager on December 10 to make the views of the "The cage in whi aluminium cans are stored w

SCHOOL CHILDREN PROVE THAT NEW BYPASS WILL DAMAGE THE LOCAL ENVIRONMENT

EXCLUSIVE BY MATTHEW DAVIES

USING an innovative new program on their classroom computer children from St. Chad's School have shown town planners that a proposed new bypass would have a detrimental effect on their local environment.

The children surveyed the local area and fed details into their Topographer program, which allows them to look at the relevant area in 3D. They then added the new road along its proposed route and it became obvious that the road would not only affect an area renowned for its badger population but would also distract children in t classroom as they would able to see traffic movi along the new road.

The children even went far as to propose a new ro for the road to the to planners. The proposed ro would have a negligil impact on the area but s provide the much needed rel to existing roads.

A SERIES of sweeping proposals which would abolish free parking in district shopping centres, change some bin collections, increase lettings charges and scale down mileage claims by some council officers, have been announced by Labour.

In the first indication of their intentions si seizing power jointly with the Conservati party has produced a h 1,000 " servi

● REDUCING mainten

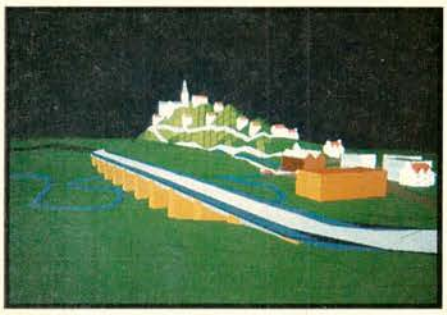
Other econ departmental b cutting scho fees.

Th

Topographer is a major application for the Geography curriculum which allows children (and teachers) to have lots of fun whilst learning all about maps, contour lines, valleys, rivers etc. In fact *Topographer* covers virtually all items found on a map.

The real break through with *Topographer* is its 3D section which allows you to convert a 2D map into a 3D model on screen. Imagine turning a set of flat contour lines on a 2D map into a 3D model which clearly shows the hill — no more cardboard cut out models or papier mache! You define where you look from, and what you look at.

Topographer also covers aspects of the IT and maths curriculum with its modelling capabilities. Just stop for a minute and think of the projects that you could do with *Topographer*. You could make a map of the local area with churches, pubs, woods etc. and then view it from various places. If there is a bypass proposed you could add it in to the existing landscape and see where it is visible from and what impact it is likely to have on the community. I'm sure you can think of a hundred and one topics.



◆ Fully RISC OS 2 & 3 Compliant and 1 megabyte friendly ◆ Suitable for all ages from 6 onwards ◆ Easy and quick entry of all symbols (over 100) ◆ Wooded areas which translate into impressive 3D landscapes ◆ Definable map size and scale which can be linked to the national grid references ◆ Powerful 3D mode giving a true representation of the landscape ◆ Stunning 3D models which can be saved as a sprite file for use with other applications.

£79.95 inc. VAT

All specifications subject to alteration without notice

AVAILABLE • APRIL 1ST 1993

CLARES

We accept Access and Visa.

Axis

...turning the tables

THE Axis group of planets is the mightiest in the universe. Axis is more powerful than even the Alliance, but has been disguised until now as a mining colony. Yet it is capable of destroying entire fleets.

You have been chosen from thousands to penetrate its ground-based defences and destroy the core field generator hidden miles below the surface. Well, after all, this is a shoot-'em-up.

Unfortunately, the generator doesn't want to be destroyed. In fact, it has gone as far as putting several hundred very angry tanks and armoured vehicles between you and it. Not to mention the massive and all too powerful gun turrets that would be happy to rip your craft in half – together with anything inside.

To make things even harder, the Alliance have given you a ship that is about as easy to control as a 747 with no wings. You do possess a range of weapons that could impress even Schwarzenegger.

When deciding how to control the ship, you'll find that all needs are catered for. As with most games, keys and buttons are fully redefinable, and there are also seven methods of control.

You can choose between two types of keyboard control, two mouse, two joystick and even a Super NES joypad. The last is excellent, and if you can get hold of one, try it.

To move your craft, you must perfect the controls of up, down, left and right, together with the three weapons buttons and finally bi-directional rotation. You thought Interdictor was hard!

The in-game graphics are reasonable and the title screen has more than a passing resemblance to Swiv. However, what makes the game special is the craft rotation. Axis rotates everything except your tank – which can leave the average mortal decidedly giddy.

Such computational number-crunching requires a fast processor and ARM 2 users will notice the lower quality, but it's still playable. ARM 3 computers have the treat of very smooth rotation although the rest of the game is unchanged.

The best description of the sound is *very* loud, but you don't have time to notice the effects, or lack of music when you are trying to remember the keys and beat off a squad of lunatic tanks.

The gameplay – surprisingly for a shoot-'em-up – is very original, due to the novel controls. Enemies at the start are not too hard to destroy, and fortunately, you can actually travel faster than enemy shells, which makes dodging bullets considerably easier if you run backwards.

Luckily, plenty of power-ups are available. The only down side, is that you are not told what they look like, or what they do. Some give you extra orbitals – small, explosive balls that you can fire at enemies – and others simply boost up your energy.

Unlike most games, their presence seems to become more frequent as you progress, and are a welcome sight after a close encounter of the painful kind.

The levels are passworded and are reasonably well graduated. The hardest part of the game – other than surviving – is actually knowing what everything is and does.

As a final note, Axis – unlike many games now – is not installable on a hard disk. It doesn't take too long to load but more and more games are managing to do this, while still retaining copy protection – which is in all our interests. But despite the grumbles, Axis is excellent. Maybe not a classic, it is one of the most original shoot-'em-ups available.

Like any game, it could be improved further – in particular I'd have liked a two-player option and a high-score table. However, if you're feeling dexterous and have a fairly strong stomach, Axis is for you.

Paul Mason

● *Look, can't we sit down and talk about this?*

● *Ever had the feeling you're being watched?*

● *Thank goodness the planes don't fight back*

● *Whatever you do don't cross the thin red lines*

PRODUCT SPOTLIGHT

Price: £24.95
Supplier: TBA Software, 24 Eastgate, Aberystwyth, Dyfed, SY23 2AR.
Tel: 0970 626785
Requirements: ARM 3 recommended for smoother rotation

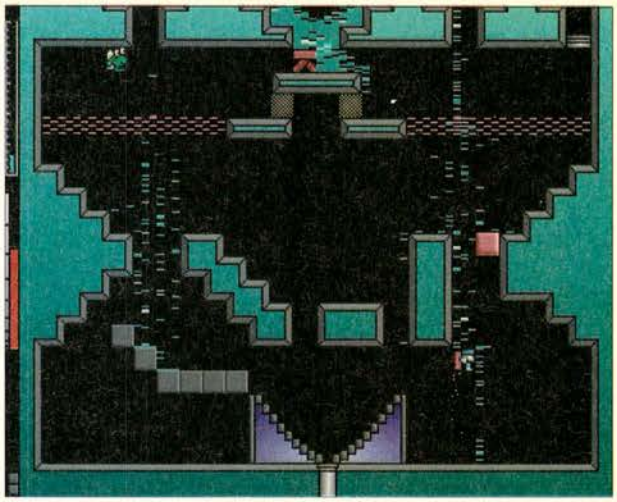
Real McCoy 4 Special Edition

... even better than the real thing

GAMES collections are a bit like unexpected presents from distant relatives at Christmas. What, you wonder to yourself, can possibly be in that parcel. Pairs of remarkably uninteresting socks? Ties that taste forgot? Perhaps a particularly foul brand of evil smelling cologne? Or will it be four naff games from some software house's back catalogue?

I must admit that the prospect of a trawl through games gone past their sell by date courtesy of the 4th Dimension filled me with little anticipation. I already knew what three of them were like and the other didn't look like it was going to generate much excitement.

It just goes to show you how wrong you can be. Up for your delectation in The Real McCoy 4 are Galactic Dan, Grievous Bodily 'Arm, Cataclysm and X-Fire.



● *Just when you sort out the water leak, up pop some nasty aliens*

Galatic Dan

Let's start with Galactic Dan, a particularly bizarre 3-D arcade game. You are charged by your rather smug looking superior to go out and rescue hostages from a variety of futuristic cities.

There's some waffly plot about aliens and such things, but it's all irrelevant since the only thing you need to know are that you've got a time limit in which to rescue a set number of hostages, without being reduced to ions yourself.

So off you go on your frantic travels, hurtling around the 3-D corners at full tilt until you find where the emergency brake button is. Then the really adept can do handbrake turns to their heart's content, or at least until a giant spidery alien sees you showing off and separates your atomic structure into its constituent parts. Whoops.

Okay, so enough messing about. A bit of caution pays off when the aliens hove into view. At which point you can level them and nip in to collect that giant bouncing ray-traced hostage who squeals a message of delight!

Er, yes, not only are the participants in this space opera all handsomely ray-traced, they also bounce, as indeed you can.

This completely negates the flat feel from having polygon scenery, since you often need to bounce up steps and across bridges in order to perform your duties.

Galactic Dan was a complete surprise since it was the one in the collection I hadn't played before. Some great graphics, fast action and complete off-the-wall irreverence make this one a winner all by itself.

● *Below left: Galactic Dan is excellent entertainment and much underrated*

● *Below right: The key to X-Fire is to master the controls as quickly as possible*

GBA

There are two ways you can look at GB 'Arm. You either be a miserable so and so and whinge about the dismal graphics, the overt sexism, the complete lack of originality and lame-brainness of it all – or, you can accept those failings and admire the simple yet slick gameplay, and enjoy beating demented cats and women with whips with a well-placed boot.

Personally, I prefer the second school of thought, since yes, GBA is remarkably tacky and hilariously silly. Streetfighter 2? I don't think so, but unlike virtually all beat-'em-ups, this one doesn't take itself at all seriously and does offer polished gameplay so that you can admire the unrelenting silliness of it all. Great fun for when you've finished being sensible for the day, since this is pure mindless escapism.

Cataclysm

If you were to describe Cataclysm with two words what would they be? Strange and wet? Sloppy and pixely? If you've played it before you'll probably have your own opinion, but for what it's worth I'd describe it as poetic and beautiful. Before you switch off completely, this isn't to say that it's about flower pressing, or some such genteel pastime.

The point of the game is to arrange

for water that's flooding your spaceship to be re-routed down to a plughole and evacuated into the galactic void. To facilitate this you have a limited supply of bricks for redirection duty and an ability to destroy the seals holding the water in.

When you do, out it pours, and quite hypnotically it cascades, pixel by pixel, down the screen through the various internal components of the ship. And it runs everywhere, usually just where you least expected it to, which necessitates some frantic rebricking.

Just when you think you've got the hang of it and that it's not that hard after all, you get alien infestation and a pressing time limit.

While the herding aspect has a distinct Lemmingesque flavour that's where any similarities end. Cataclysm is a strange and involving game, perfectly melding short bursts of action with tactical finesse. Definitely a must-have purchase.

X-Fire

And finally, we come to the weakest of the games on offer. X-Fire is a simple shoot-'em-up, with the severe limiting factor of being played out in a series of square grids. Out come the enemy, slowly or not so slowly, tracking you down.

A quick fire here and a mad sprint there, then some cagey positioning before you strike again. Perhaps the programmers saw X-Fire as an allegorical statement on the ruthlessness and competitiveness of big business.

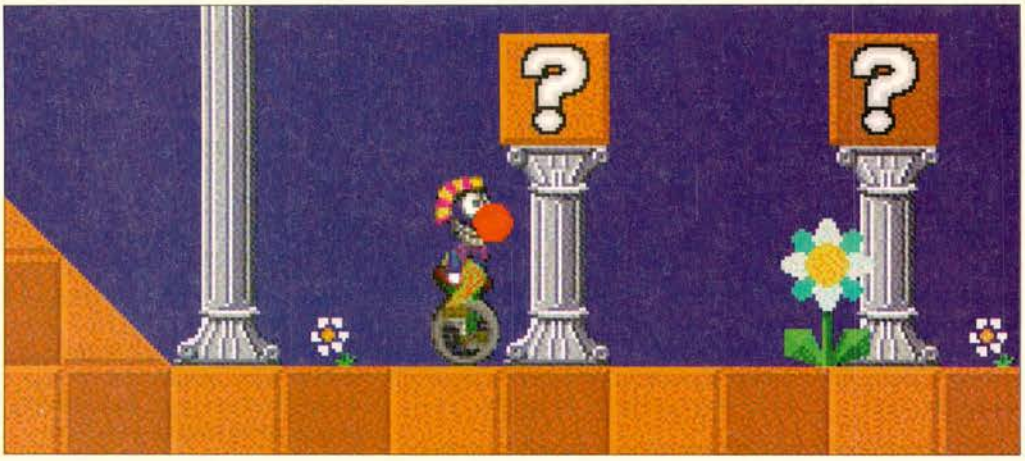
The one real flaw in the game is that your firing mechanism is based on the direction you're heading in. So you have to run at the enemy in order to fire on them. A bit of a gameplay goof really. Still, it's relatively attractive, has a rather fruity ecological-style music track and provides light relief for 10 minutes.

If The Real McCoy 4 *was* a present from a distant relative, you'd open it up to find a bottle of Bollinger rather than Asti Spumante or a Ralph Loren shirt rather than something from C&A. In other words, something of a surprise and worth having.

Duncan Evans

PRODUCT SPOTLIGHT

Price: £29.95
Supplier: 4th Dimension, 1 Percy Street, Sheffield S3 8AU.
Tel: 0742 769950



Cycloids

... cycling a new world

CYCLOIDS is a strange game. The object is to guide a clown who rides on a unicycle around the weird land searching for balloons that must be returned to outer space in order to save the planet Earth, while avoiding the many creatures that inhabit this land. Fail and it's goodbye from the happy smiley children's entertainer.

Fortunately, Cycloids can be run in a variety of ways. It can be installed on to your ram disk – memory permitting – hard disk or run from the floppy. You can redefined the keys and there is a new feature of registering the game so you can be provided with updates. Once it's loaded you are greeted by a small musical ditty and a run down on the objects and values.

Cycloids is a platform game with over 25 levels all of which are inhabited by weird creatures in odd landscapes. The graphics are bright, cartoon-like and the clown and unicycle move smoothly. You only have three keys to use, the most important being the one enabling you to jump. If this is not used precisely you'll find yourself losing one of your six lives.

I needed quite a lot of practice to perfect my manipulation of the clown and a fair amount of skill to negotiate his adversaries: Mutant worms, flying elephants, toy aeroplanes and so on. Along the way are hanging balloons which must be touched to release them into outer space.

The sound is used effectively with different ones associated with items as they are picked up. Diamonds, apples, bananas and treasure chests are scattered around and by carefully jumping at bonus squares you can boost your score.

Do be extremely careful over bumpy landscapes as they are potentially lethal if you fall off the bike and into a hole. Look out for the frog too. Once you've negotiated a level you enter a doorway to reappear on the next level.

Though there is no password facility, Cycloids lets you pick up flags so after your next ignominious death you'll find yourself where you collected your last flag. After you've managed to complete five levels you aren't dumped back at the very first level either which makes life a lot easier, I can tell you.

Additional lives are hard to come by and if you find a spare nose, pick it up for either a fire option or an extra jump facility – you'll need it.

I rather liked Cycloids, as it has a slightly different feel to the other run-of-the-mill platform games. It's smooth scrolling and fun graphics make it a sure winner.

Brett Colley

PRODUCT SPOTLIGHT

Price: £25
Supplier: Software 42, 109 Ferry Road, Hullbridge, Essex SS5 6EL.

Switch

...budget brain teaser

● *Switch looks like Connect 4, but you need to be able to plan your strategies against the clock*

WHEN you're fed up shooting aliens or you've done your head in on the latest level of Lemmings, it can be a refreshing change to tackle a puzzle of a different kind. One such offering has just been released by budget software house Soft Rock.

Switch is a simple to understand and simple to play. What's not so easy is thinking fast enough and planning strategies ahead to get a good score.

The screen displays a 7 x 7 grid, like a Connect 4 frame, and the bottom four rows of this fill up with coloured discs. The object of the exercise is to match two or more adjacent colours on the bottom row. When you do so, these are removed, the higher discs fall down to fill up the spaces, and you carry on from there.

The name of the game comes from the action of clicking on alternate discs in the bottom row which causes those on either side to swap places. In addition you can scroll the complete bottom row left or right. You can also opt to remove a disc using the Adjust button if you get stuck but you lose points.

Now if that was all there was to it, it would be easy. But there is a catch: The whole thing is against a time limit and it's this that provides the challenge. In fact, there are nine skill levels to choose from, each with 10 time limits, making 90 levels in all.

Switch is controlled by the mouse, and features Tracker-style music which thankfully can be turned off at the main menu.

The game doesn't take full advantage of the 32-bit's abilities and is nothing to write home about, but at the price it will provide quite a few hours of cheap entertainment.

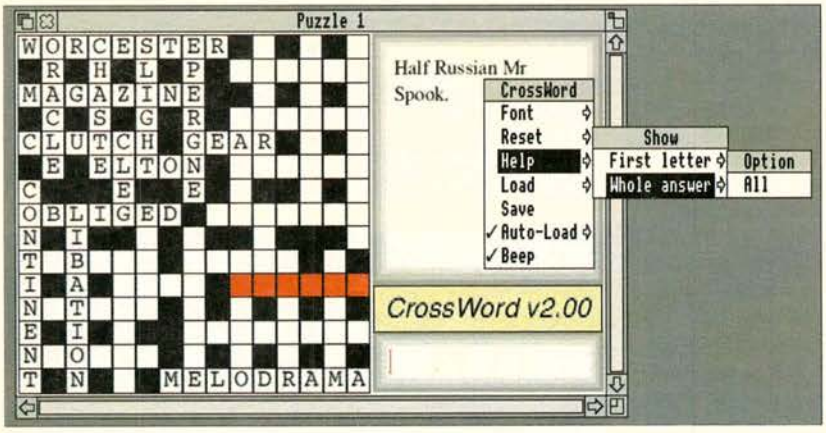
Brian Rigby

PRODUCT SPOTLIGHT

Price: £3.49 (£3 if bought with another budget game)
Supplier: Soft Rock Software, Freepost (BS 7978), Westbury-on-Trym, Bristol BS10 7BR.
Tel: 0272 491634

CrossWord v2.00

...give us a clue



● *Multi-tasking crosswords which don't leave you out in the cold*

ANOTHER method of relaxing after a hard day's alien blasting is to tackle a crossword. They normally come in one of three varieties: The tea-break type involving simple word association, general knowledge and cryptic. Being good at one doesn't necessarily make you good at another.

One that could combine elements of all three would give an opportunity to sharpen your skills over a much broader spectrum and it is this kind of puzzle that has been attempted by David Ramsden, in his CrossWord program.

There are 50 challenges on the disk containing all three types of clues. The grid of each puzzle isn't numbered and it doesn't need to be. To solve a clue you simply click on the first blank square of the word – using Select for across and Adjust for down – and the clue pops into a window.

You answer this in another window and if you are correct the letters are transferred to the main grid. If you are wrong, nothing happens. Clicking Menu anywhere in the puzzle area produces a drop-down menu with which you can alter the font, load and save puzzles, auto load and, best of all, get help with either the first letter of the word or the whole thing.

A major improvement over the first version is the ability to create your own puzzles using Edit. They are converted by simply dragging the file on to the CrossWord icon.

I've solved a few crosswords in my time, of all kinds, but I must admit that without the Help function I would have been really struggling with some of the cryptic clues.

It's extremely good value for money and should provide a challenge.

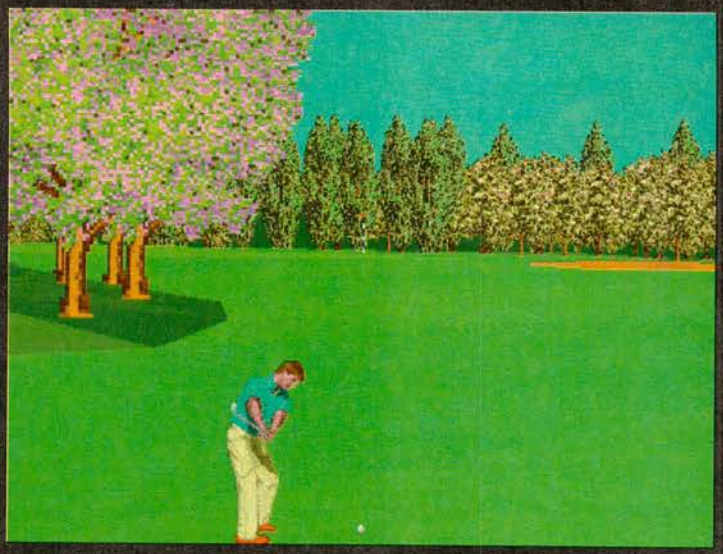
Brian Rigby

PRODUCT SPOTLIGHT

Price: £5.95
Supplier: David Ramsden, 7, Chevet Lane, Wakefield, West Yorkshire WF2 6HN.
Requirements: Floating Point Emulator

Virtual Golf

'It's almost worth selling your clubs to buy it!'



No more power meters – you control your swing by moving the mouse.

Virtual Golf is not like any golf game you have ever played. Your shot is controlled by the movement of the mouse giving a degree of direct control and 'feel' that is unparalleled.

Power is gained by a smooth backswing and a good follow through but chip shots will require all the delicate skill and judgement that you need on the course. Hooking and slicing come into play by opening and closing the face of the club (mouse) and also by a bad swing.

As with the real thing your primary objective is to improve your handicap which starts at 28. When you are ready you can play assessment rounds (which can take you up as well as down) and as you progress you will gain the opportunity to enter the 6 increasingly competitive tournaments that are included.

The course (which consists of over 1 Megabyte of data) is based on Wentworth and includes hills, ditches, digitised trees, bunkers and paths to create an unsurpassed illusion of reality. The greens are varied and undulating to add to the challenge that putting demands on real greens and the ball convincingly responds to the slightest changes in the slopes.

In Virtual Golf, the author Gordon Key has produced a simulation that anyone can play and enjoy yet will challenge and satisfy even the most ardent golf fan.

WENTWORTH LEADER BOARD WENTWORTH
Tournament: Beginners Knockabout
PAR PLAYER SCORE Rnd1 Rnd2 Rnd3 Rnd4
EVEN Gus Slicer 4
EVEN One Club Willie 4 4
+1 Andi Capp 5 5
+1 Lester Rainfalls 5 5
+1 Foggy Specs 5 5
+1 Paul Macarty 5 5
+1 John Lemon 5 5
+2 Walter Pidgeon 6 6
+3 Ringo Planet 7 7
+3 George Hairy 7 7

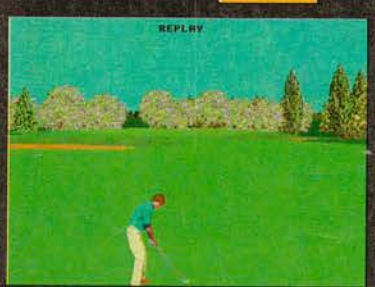
Features include:

- Up to 4 Players
- Strokeplay
- Matchplay
- Six Tournaments
- Animated Course Maps
- Auto-caddy
- Replays
- Gamesaving
- Course Viewing Options
- Extensive Practice Options
- Driving Range
- Left handed Facilities

For All 32-bit Acorn Risc Machines
Requires 2 Megabytes £34.95

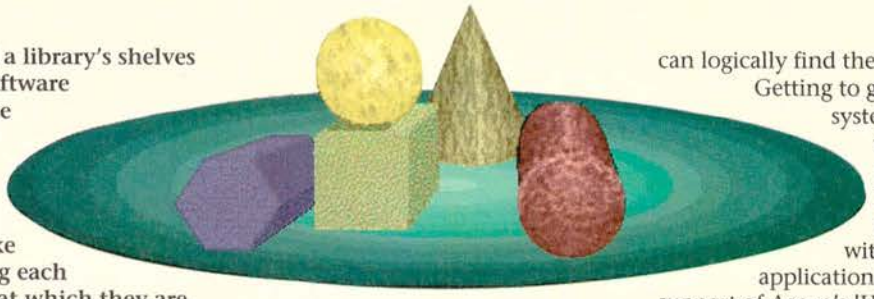
The Fourth Dimension, 1 Percy Street, Sheffield, S3 8AU
Tel: (0742) 700661 or 769950

Access VISA



Book a window seat

Chris Kecun takes a close look at what Clares' latest art package has in store



IF we could fill a library's shelves with all the software released for the Archimedes, how much space would you estimate art packages take up? Categorising each by the markets at which they are aimed, for example a shelf for primary school design, another for scanned image manipulation and so on, you would get a fair amount of the wall covered.

Taking a step back from your newly blanketed wall you would see some of our old best selling favourites or even the odd sequel. This is the case with Pro-Artisan II *The Revolution* from Clares, the newcomer to the big happy family of sprite handling packages.

For most of us this is good news indeed. It was on Artisan, Clares original 16-colour package bundled with the A3000 learning curve that I and many others, realised the potential of ourselves and that of our machines. This opened a bright new window to the world of computing.

Opening windows is what Pro-Artisan 2 is all about. Imagine your favourite Pro-Artisan tools laid out simply in logical coherent menus awaiting the touch of the mouse.

To the left of the work window a row of icons resides – keys to the menu system. Clicking Select on the paintbrush icon allows you to search through the paintbrush menu, letting you select tools and adjust brush sizes.

It isn't the fastest way to go about your graphics but it makes sense to pigeon hole tools neatly where you can logically find them.

Getting to grips with this system is easy: It took me less than half an hour to get my bearings within the application with the support of Acorn's !Help program.

The palette icon works in a slightly different way. Clicking Select on this brings up the palette for 16 or 256 colours. An interesting addition to this compact palette is the slide bar allowing you to increase or decrease your chosen colour's intensity.

Pulling the slide bar to the left would make the colour weak and act like a wash but pushed to the far right of the scale it would retain its true intensity. A dither pattern just above the slide bar helps estimate visually how you have placed the colour setting.

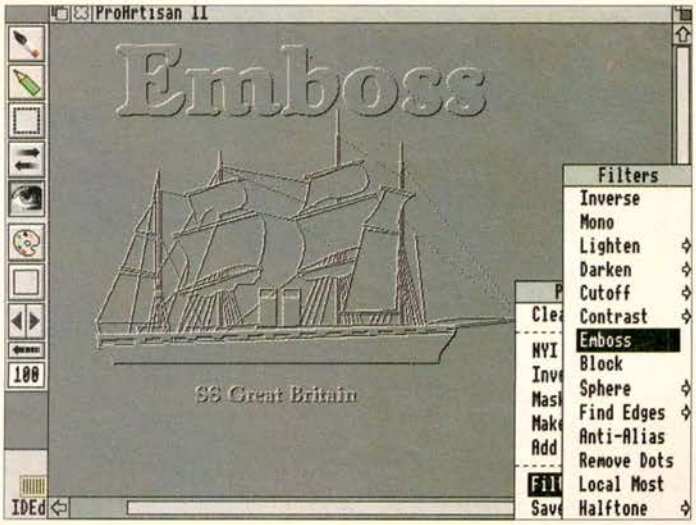
If you are using a 16 colour mode pressing Menu over the palette icon allows you to adjust the RGB ratio of the currently selected colour.

I'm happy to say it is still possible to select straight off the work area by clicking Adjust on a pixel

PRODUCT SPOTLIGHT

Product: Pro-Artisan II
Price: £135
Supplier: Clares Micro Supplies, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7OA
Tel: 0606 48511

● *Take a look at the new dopple effect*



● *The ability to emboss is one of the highlights of the program*

containing the colour you desire.

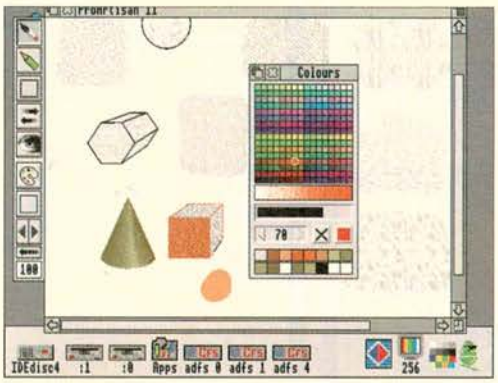
Clicking Adjust on the icon palette allows you to place the palette anywhere on the screen without it disappearing as soon as you apply a colour.

Below the slide bar are boxes that contain the last 16 colours used in your artwork.

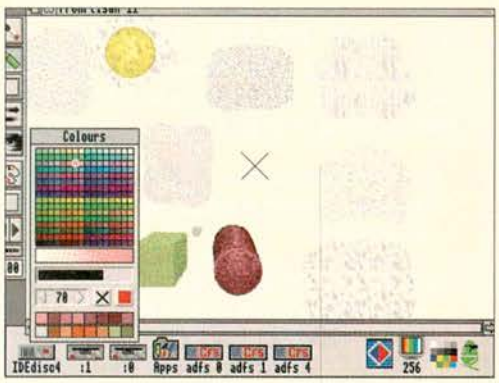
Pro Artisan II has all of the traditional tools expected of a sprite handling package and has inherited tools such as magic brush, user-defined graduated fills and the sprite pool.

It has retained, I'm afraid to say, a characteristic that I wish had ended with its ancestors. You are still expected to re-adjust your work window each time you step up the zoom and then centre the area of attention in the middle of the window, or it gets lost off the side somewhere.

A more direct approach – like the one employed in Artworks – would be infinitely more preferable.



● *Selecting colour from Pro Artisans II's palette*



● *Mixing colour with texture to get realism*

New features

I was intrigued to discover some new developments while delving deep within the menu branches. A tool named *dopple* in the paintbrush specials menu provides you with a randomly generated group of circles not dissimilar to braille.

If you continue to apply the dopple effect of the same area the dopples overwrite themselves until no trace of the background colour exists.

Another new option in the paintbrush menu is the *inkpen*. This makes the brush size increase from nothing to the user-defined brush size.

It would be nice if you could toggle the speed at which the brush increases and I would suggest an option to make the brush dwindle back to zero once Adjust has been pressed.

The texture option was a surprising discovery, giving you a choice of 16 different textures ranging from sponge to concrete. These can be used to wash over existing coloured shapes giving them a realistic composition. Used via the crayon option the textures act as a specialised wax crayon forming a rubbing with your brush on screen.

Perhaps the most interesting and unique utilities are found in the screen processing menu where a list of tantalising goodies lines up. The one that caught my eye was the emboss filter. This process makes your graphic look as if it had been lifted out of the background by lightening the top and left corners and darkening the right and bottom of the edges.

You can get a similar chiselled appearance by reversing the blend fill colours. I cannot say how many times I've had to achieve this effect manually before now. Apart from these processes, of which there are many I have not mentioned, there is very little about Pro Artisan II that could not be duplicated with a little more time and less ease on another professional art package.

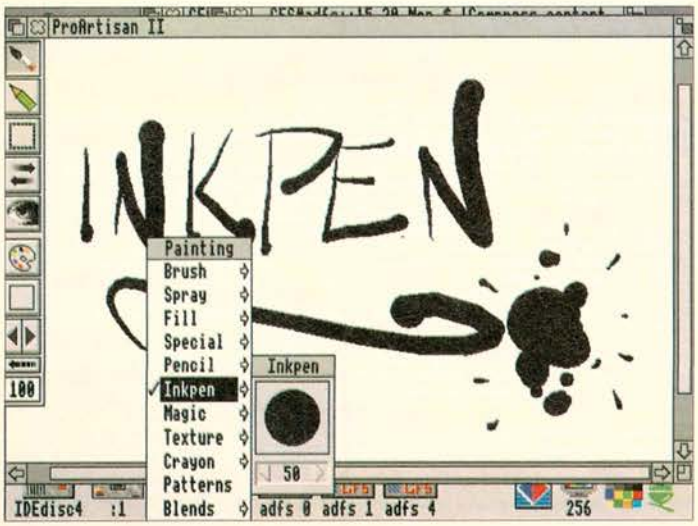
If you have grown up with Clares' art packages then Pro-Artisan II is only natural next step to take.

If you are looking for the definitive sprite manipulation package you are likely to be disappointed because there is no such thing.

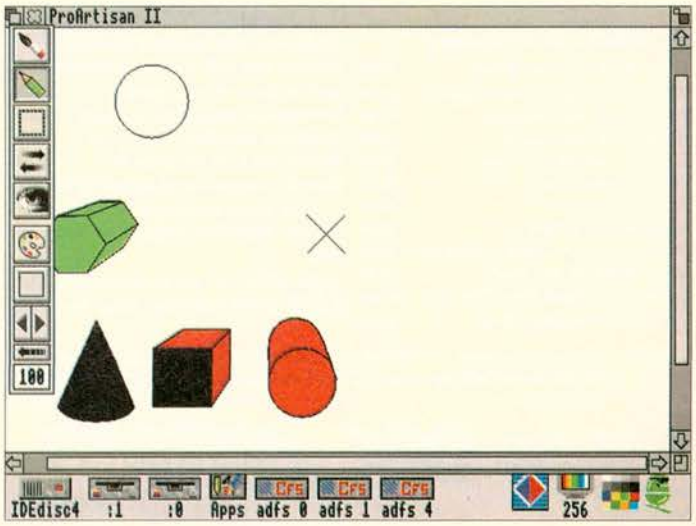
Applications like this work better as a team transferring the data from one to the other as a particular tool is needed. This will be made easier by its new Risc OS status.

Summing up

Pro Artisan II is a good high-level art package that will draw its support from worshippers of its ancestors and will encourage them to new efforts. Its simple layout will allow newcomers to catch on fast and the new features are definitely worth taking a look at and some of the process filters are invaluable.



● *No need to get inky fingers with this InkPen*



● *The first step in any picture*

ECCTIS 2000

IN ASSOCIATION WITH

Endsleigh

THE NEW ECCTIS 2000 CD-ROM CONTAINS EVERYTHING YOU NEED TO KNOW ABOUT 100,000 COURSES IN HIGHER AND FURTHER EDUCATION THROUGHOUT THE UK.

- Fast and easy access to entry requirements, qualifications awarded, course content, institution details and CATS information.

*OF THE DISCS WHICH HAD PROVED THEIR WORTH AND WOULD DEFINATELY BE BOUGHT AGAIN, **ECCTIS** WAS THE MOST POPULAR*
NCET: CD-ROM in Schools Scheme Evaluation Summary

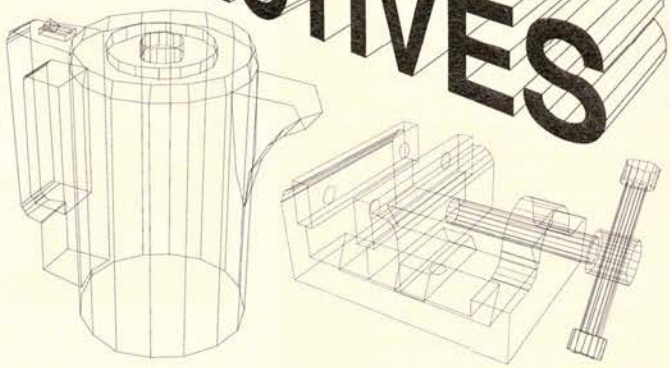
- ***ECCTIS 2000*** includes the new UCAS HANDBOOK (1994 Entry). Information services from BTEC, NCVQ and SKILL.
- Also Apple Mac & PC Versions
- Regular updates
- Available by Subscription

Advisers can obtain an information pack from:
ECCTIS 2000 Ltd.
Fulton House, Jessop Avenue,
Cheltenham, Gloucestershire
GL50 3SH
Tel: 0242 518724
Fax: 0242 225914

ECCTIS ©
© Crown copyright
Managed by ECCTIS 2000 Ltd
on behalf of
the Secretary or State for Education

PERSPECTIVES

WITH STEREO 3D VIEWER!



Perspectives provides a simple means to interactively explore the concepts of 3D design. The drawing screen shows three orthographic (1st or 3rd angle projection), and a pictorial window. The pictorial view may be in perspective, isometric, or oblique (the perspective view can also be rotated/ zoomed to any view point). Drawing takes place in any orthographic window. A wide range of drawing and transformation tools are available. All views are active, allowing real time generation of 3D objects. A special viewing mode allows rotation of objects in full STEREO 3D, for a spectacular aid to visualisation. Output of all, or any individual view, is via a RISC OS printer driver, an HPGL compatible plotter, or as a Draw file.

Perspectives runs on any Archimedes. Single Copy £45 + VAT
A colour monitor is required for stereo. Site Licence £75 + VAT

MasterCard Access

TECHSOFT UK Ltd., Old School Lane, Erryrys, Mold, Clwyd, CH7 4DA Tel: 082 43 318 Fax : 082 43 564

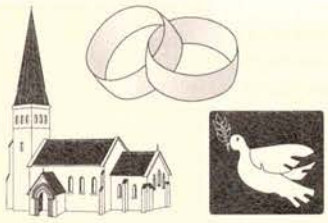
3D CAD FOR THE ARCHIMEDES

Impression Resource Disc

With over a 100 borders, a range of useful clip art and a selection of hints and tips files. **£7.95**

The Impression Junior Resource Disc as above with working borders. **£7.95**

NEW Ovation Resource Disc - contains extra borders, clip art, hints & tips etc. **£8.95**



Parish Magazine - 3 discs of Draw files, and 1 disc of King James (AV) New Testament text files **£16.98**

The Pond Kit - 2 discs for key stage 3 to 'A' level - clip art, diagrams, worksheets and datafiles - **£14**

Some of the 50 + Clip Art Collections

Home Publisher clip art (Draw)	£5.95
Europe Maps colour (Draw/compressed)	£7.95
World Maps (Draw/compressed)	£7.95
UK Maps (Draw/compressed)	£7.95
Computer Technology (Draw)	£5.95
Ships & Yachts (Draw)	£5.95
Steam Trains (Draw)	£5.95
Columbus (Draw/Paint)	£5.95
Extinct Animals (Draw/Paint - compressed)	£7.95
Houses of the World (Draw)	£7.95
Animals of the World (Draw/Paint)	£5.95
Civil Aircraft silhouettes (Draw)	£5.95

Ready to run, fully illustrated ClearView hypertext files, with free copy of ClearView

EuroFactfile for the New Europe	£6.95
Scientists & Inventors 300+ biographies	£8.95
Christopher Columbus' first voyage	£6.95
National Parks (for key stage 2)	£8.95
ClearView Advanced version NEW PRICE	£25.50
"Can be used by anybody who can click a mouse button" - September 1992 Archive Magazine	

Fonts

Griffin script font + free decorative alphabet	£8.47
BOXI automatically gives boxed text	£8.47

Over 1800 clip art files now available - for A3000/A3010/A3020/A4000/A5000 & all Archimedes machines
Send £1 for the Auto-Catalogue and ClearView/Sample disc (free with order)

Add VAT at 17.5% and £1 postage to all orders. School order forms accepted.

DEC_DATA Access VISA
Phone/Fax
Dep AC7, PO Box 97, Exeter, EX4 4YA 0392 221702

12th successful year

Micro-Aid
SOFTWARE FOR THE BBC MICRO COMPUTER

GENEALOGY

(See review in Feb '87 and Aug '89)

FAMILY HISTORY SYSTEM The most popular program ever written for us. Enables you to produce a full family tree and many other genealogical listings.
BBC/Master/Compact version £21.95 Archimedes version £25.95

PAYROLL

EXTENDED PAYROLL Now in its twelfth year. The only BBC program for wages, tax and National Insurance for up to 400 employees cover... Four weekly and Monthly pay whether... of data per employee in t... employee inform... Extended ... wages ... and post tax adjustments and even no pay. Three types ... different types of payslip printout and an optional coin analysis. An annual contract keep you up to date with the budget changes. Send for demo disc **£59.95**

The only payroll program for Acorn Computers

BOOKKEEPING

(see review in March '89 Acorn User)

1) CASHBOOK Double entry bookkeeping for home or club use. All data kept in memory. Three character analysis code enables you to know where the money comes from and where it goes. 48 transactions per A4 page. Analysis summary up to 30 categories. **£14.95**

2) CASHBOOK D As 1) + random access giving 2000 items. CASH/BANK or VAT/BANK headings. Password control. String or numeric searches. For schools, clubs & non credit businesses. **£24.95**

3) ACCOUNT As 2) + Credit facility and statements. For small businesses working with credit. **£39.95**

4) ACCOUNT-PLUS As 3) + Invoicing, Orders, Quotations etc. Full sorting of data by 5 options. Automated statements, mailing labels. Multiple automatic nominal ledgers.
For independant schools and VAT businesses who wish to cut the effort. **£59.95**

5) TAXMAN This new program which has been under development for three years allows you to enter all your transactions and to printout end of year results with balance sheet and even calculate tax due. The Inland Revenue love it and so do we. Results can be taken from our other accounting programs and entered into TAXMAN making a superb combination. **£59.95**

6) MICRO-TRADER Is a full accountancy package with features right through to final balance sheet.
Stock Control at £88.13 extra. **£235.00**
For shops/firms, accountants wanting full accounting facilities. Payroll can be integrated. **£88.13**

MAILING

218 addresses in memory or up to 1875 on random access disc. Multiple selected and repeat labels, mail merge, full sorts. Ideal for subscription lists, promotions, any kind of mailing. **£14.95** or **£35.95**

Ask for detailed brochure for more software and other items.

Demo discs available for £2.50 each. Micro-Trader £25. Prices include VAT add £1.00 p/p

PLEASE NOTE OUR MOVE & CHANGE OF ADDRESS FROM CORNWALL

(FAX AVAILABLE)
Kildonan Courtyard, Barrhill,
S. Ayrshire Scotland. KA26 0PS.
Tel: 0465 82288

Access

Stepping motors revisited

After nine years, Mike Cook takes a new look at an old technology

EARLIER this year, in a Problem Solved reply, I promised to return to the topic of stepping motors. I last covered this in May '84 and has been one of the most requested reprint articles. Reprints of any Body Build article are available from Musbury Consultants for £1.

Well, I am not going to repeat what I said there, but over the years there have been some developments in the field of stepping motors.

Last time I looked at motors with four coils (four-phase) which are usually arranged with one connection common to all coils and as such the coils are either on or off.

A newer form of stepping motor is becoming increasingly popular, namely a two-phase motor. This has two separate coils which enables you to drive it in a number of different ways. Two-phase motors are generally lighter and have more torque than four-phase ones.

There are basically three different ways of driving a two-phase motor: Wave drive, Two phase on and Half step. A look at Figure I will illustrate the differences. Now for simplicity, this shows only a single wound coil giving 90 degrees per step. In practice there are multiple coils all wired up in parallel, which reduces the step angle from 90 degrees to a typical 1.8 degrees per step.

With wave drive only one coil that is activated at a time. Each coil is activated in turn and has the current reversed from the previous time it was activated. Let's call the two coils A and B and we say that A+ represents the coil with current flowing through it in one direction with A- the reverse direction. Then the wave drive sequence will be:

A+ / B- / A- / B+

With Two phase on, both coils are energised but only one coil changes direction at a time. This sequence is:

A+ B- / A- B- / A- B+ / A+ B+

Now both these driving schemes have four steps in the sequence so each step will produce the same degree of movement. However, with the second sequence, as there is current flowing in both phases, the motor will draw twice as much current which will be translated into more torque. Therefore, these two driving methods can be thought of as high and low power modes.

We can combine these two methods to get what is known as Half stepping. This is where we alternate between having one, and both, coils energised. This produces a sequence of eight steps and so for each step the motor only turns through half the angle produced from the other two sequences. This sequence is:

A+ / A+ B- / B- / A- B- /
A- / A- B+ / B+ / A+ B+

This produces an average current loading and torque in between the first two schemes but with finer control over the motor's position.

Another factor limiting the performance of stepping motors is the current flow through the motor and there is usually a DC limit to the current you can pass through each winding.

The normal solution is to use a voltage such that when the motor is stationary this limit is not reached. Indeed, this is what is meant by a 5V or 12V motor – you can safely place that voltage across them.

This is fine for low speeds but it will tend to limit the top speed of the motor. The motor coil represents a large inductance and this means it will take some time for the current flow to build up to the maximum value. This delay in current flow is similar to the delay in voltage rise across a charging capacitor.

If the motor is being moved fast there might not be enough time for the current to rise to the maximum level. Even if it does, the average current through the coils will be lower than it could be and this reduces the torque and hence the top speed you can use.

The solution is to feed the motor with a much higher voltage so that the rise time is increased. However, in order not to exceed the maximum you must do something to limit the current. One way of doing this is to use a chopping supply.

This is where the current through the coil is monitored and the voltage drive is switched off when the current reaches its maximum value. Once turned off, the current will start to fall.

It is maintained by a fast oscillator that is repeatedly turning the coil on and a current sensor that turns it off a short time later. In this way the motor can deliver much greater torque at high speeds while ➤

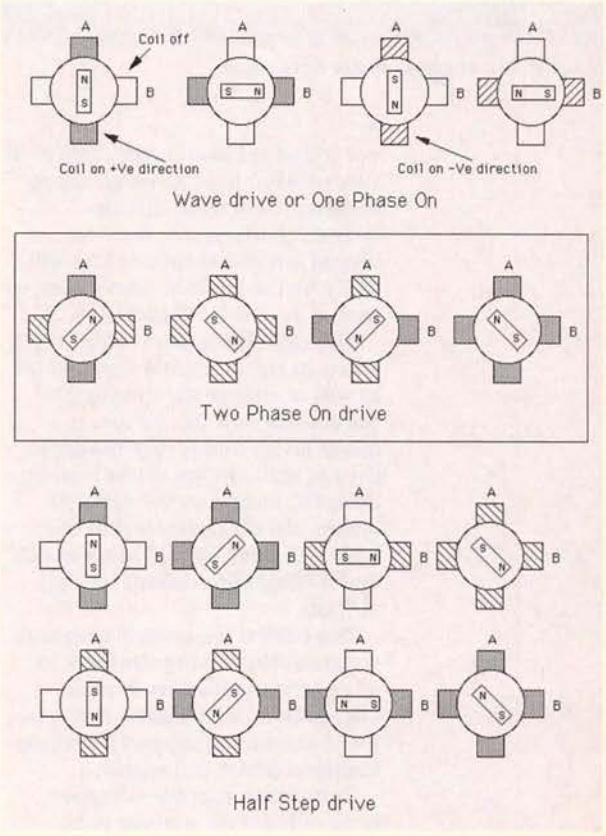


Figure I: The methods for driving the new stepper motors

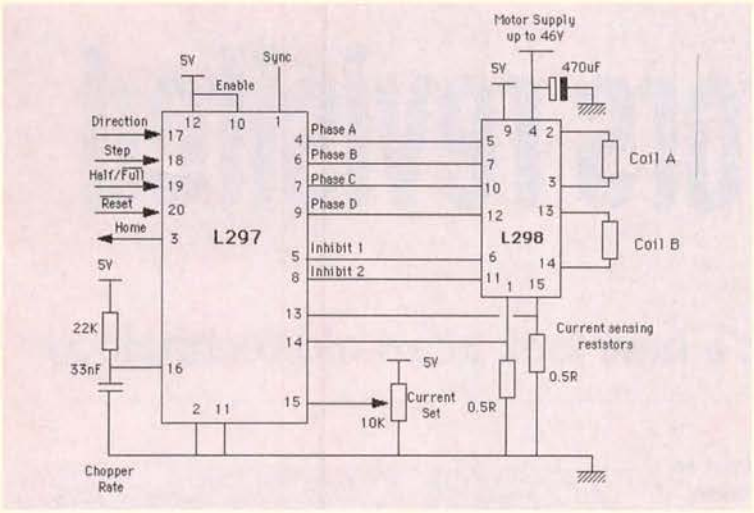


Figure II: The stepping motor drive circuit

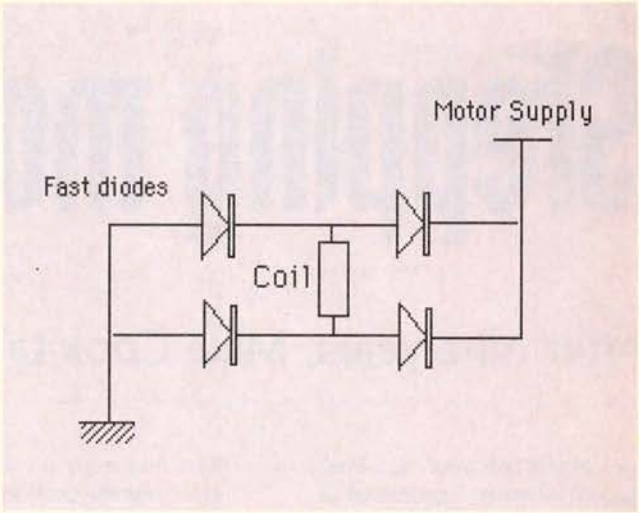


Figure III: Protecting the drive with diodes

➤ not frying at lower speeds. This is all very well but how do we go about implementing these driving systems? Fortunately, there are several integrated circuits that will easily do the job. The ones I want to look at are the L297 and L298.

The L298 is the driver chip which will turn the motor coils on and off as well as change the direction of the current flow. It's known as a driver bridge and is very similar to the LM18293 motor driver I used to drive DC motors in the April '91 article. The difference is that the L298 will drive up to 2 Amps at 46V and is fitted with current sensing outputs.

The L297 is the control chip and generates the driving sequence in any of the three schemes we have talked about. In addition, it also has the electronics to support a chopper-stabilised motor coil supply.

This means that the computer need only supply a single pulse signal to control the stepping of the motor. Other inputs to this chip can be either hard wired or supplied by the computer if you want greater control.

The direction input determines whether the motor turns clockwise or anti-clockwise and the half/full input determines the stepping scheme used. The reset input, when a logic zero is placed on it, sets the sequence to its starting position – indicated by the *home* output pin.

Two phase on

The eagle-eyed might have spotted that there appears to be no way of selecting between Wave and Two phase on. To get Two phase on you select full step when the driver is in the home position and for Wave you move to full step when the driver is one place off the home position.

Therefore, if you want your computer to be able to set up all the stepping modes you need outputs connected to the reset and the full/half control.

Finally the Enable input, when driven low, inhibits both coils thus turning them off. This can be controlled by the computer if you want to turn off the motors.

However, remember the motor can be stopped but still turned on, that is have current flowing through it. In this state it has the highest torque in the form of resistance to movement. When the motor is off it is free to be moved by any external force.

The full circuit is shown in Figure II and should suit most motors with a maximum winding current of 2A. To simplify the diagram I have omitted to show the clamp diodes, which should be connected at the end of each coil to the supply and earth. This is shown in Figure III.

It would also be prudent to put a 0.1uF disc ceramic decoupling capacitor on the power supply pins to each chip. The current sensing resistors need to give about 2.5V when the maximum current is flowing through them, but this is not critical. You can calculate the value you need for any motor using Ohm's Law.

The Sync pin can be connected to another L297 if it is being used and then you won't need to duplicate the resistor and capacitor on pin 16. It can also be used if you want to derive the chopper frequency from an external source – simply feed that in at this point and omit the connection to pin 16.

Computer control can be derived from either a User Port or an I^2C interface board. The two chips along with a data sheet for each are available from Musbury Consultants.

● *Stepping motors can be used in many different projects from free roaming buggies to robot arms. We have by no means explored all the variations that exist for driving them so as they say* I'll be back ... *well at least I hope I will.*

Body Building Pack Order Form

Body Build Pack No. 87
Stepping Motor Driver Chips L297 & L298 with data sheets **£12.50**

Name.....

Address.....

.....

.....**Post Code**.....

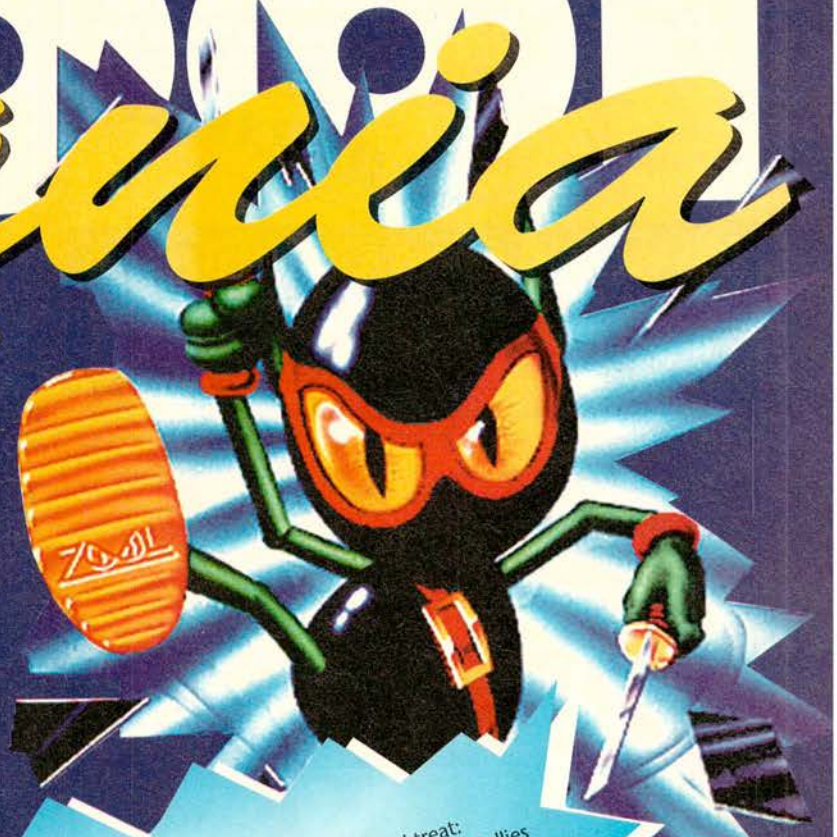
All prices include VAT and P&P. Educational establishment orders accepted. If you don't want to cut out the coupon then simply write what you want.

Make cheques payable to Musbury Consultants and send to: 5 Helmshore Rd. Haslingden Rossendale, Lancs BB4 4BG.

Foreign orders add £3 if paying by Eurocheque ***(for bank clearing charges).***

ZOOL mania

Fantastic prizes to be won from the Ninja of the Nth dimension



ZOOL has made a massive impact on the Acorn market and to celebrate the fact publishers Gremlin have put together a goodie bag of surprises for a lucky *Acorn Computing* reader.

Eyes down, and look in

To qualify for one of these six superb prizes you must first fathom out the answers to the following six questions. Then fill in the entry form and make sure that you send this to *Acorn Computing* before Friday July 30.

1 Which fictional sweetie king had a liking for chocolate?
a) Willie Wonker
b) Charles Bassett
c) Henry Everton

2 Which band masqueraded as Sgt Pepper's Lonely Heart Club Band?
a) Rolling Stones
b) Seekers
c) Beatles

3 Which one of the following, isn't an apple?
a) Golden Delicious
b) Bramley
c) King Edward

4 What sort of craftsman would use an adze?
a) Carpenter
b) Blacksmith
c) Potter

5 Teddy Bears were named after an American President. Which one?
a) Teddy Kennedy
b) Teddy Roosevelt
b) Teddy Heath

6 What is candy floss made of?
a) Sugar
b) Cotton
c) Honey

First prize – Goodie bag

Now you can celebrate each game world game with a special treat:
Sweet World – Munch you way through a box of Chupa Chup lollies
Music World – Your very own personal portable Compact disc player
Fruit World – A basket of fruit as a healthy consolation
Tool World – Try your hand at a bit of DIY with a book on the subject
Toy World – Retaliate with your own Meccano set
Fun Fair World – Life is a carnival, with two tickets to Alton Towers
PLUS a copy of the game, a Zool T-shirt and a poster

Five Runners-up prizes – Mini goodie bag

For the next five correct entries pulled from the sack there is a copy of the Acorn version of Zool, a very special Zool T-shirt and a poster to encourage you as you discover all the devious routes and traps built into the game.

Name _____

Address _____

_____

_____

Postcode _____

Tel no _____

Age _____

The answers

1	☐A	☐B	☐C
2	☐A	☐B	☐C
3	☐A	☐B	☐C
4	☐A	☐B	☐C
5	☐A	☐B	☐C
6	☐A	☐B	☐C

Now send this to: Zool Competition, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Acorn COMPUTING guide to local dealers

ESSEX/HERTFORDSHIRE

Broad Oak Computers

TRAINING
Correspondence & "Hands On" courses.

REPAIRS

The Complete Service
Software Demonstrations.
Call us for a Music Demo.

We sell Acorn Computers

Showroom Open Monday to Saturday
9.30-5.30

Acorn Dealer

☎ 0279 718767

Hatfield Broad Oak, Nr. Bishops Stortford, CM22 7HE

CUMBRIA

CSS Computer Centre
Acorn Education Centre
Acorn Unix Centre

Acorn The choice of experience

SJ RESEARCH

Showroom open 9-5.30
Six days a week
Training. Free fitting of add ons
Repairs and maintenance

NEW: A3010, A3020, A4000, A5000 & Pocket Book now in stock

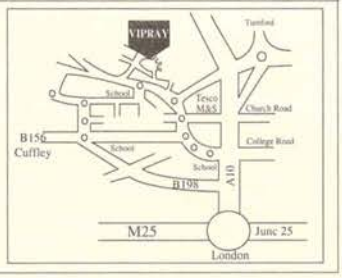
CUMBRIA SOFTWARE SYSTEMS LTD
Unit 3A, Townfoot Ind. Est., BRAMPTON
CUMBRIA CA8 1SW
☎ 06977 3779
Acorn Authorised Education Dealer

HERTFORDSHIRE

VIPRAY Computer Supplies
3 Miles from J25 on the M25
3 Spicersfield, Cheshunt, Herts. EN7 6BQ. Tel 0992 625640 (24 Hrs)

The Friendly Acorn Dealer

Educational & Desktop Publishing Specialists



Access VISA

WEST YORKSHIRE

Davyn Computer Services

For the best service in Yorkshire (we think) CALL US!
For A3000, A4000, A5000 Series, A4 Portable & Acorn Pocket Book
Visit our showroom
Open Mon-Sat 9.30 - 6.00

Tel (0924) 254800

Printer & Ribbon Sales
Expert Advice & After Sales Service
Service & Repairs to All Equipment
Full Range of Acorn Hardware & Software
(We operate the Acorn Finance Schemes)
Full Range of Educational Software in stock & on DEMO

The 'Workshop', off Princess St, Sandal, Wakefield, West Yorks, WF1 5NY

Acorn SQuirreL CITIZEN Calligraphy

NORTHANTS

Kettering Computer Centre

NORTHANTS LARGEST ACORN DEALER

Extensive range of software, peripherals and upgrades
Special needs and educational orders welcome.
Please call us to discuss all your Acorn requirements

0536 410070

Allbury Ltd, Midland Bank Chambers,
15/17 High Street, Kettering, Northants NN16 8ST

Access VISA

WALES

Acorn Replay UNIQUEway

THE OFFICIAL ACORN REPLAY COMPRESSION CENTRE
Authorised Acorn Dealer and Value Added Reseller, Multi-media Video and DTP are our speciality. A5000, A4, A3010, LaserDirect and CD-ROM systems always on display. RISC OS 3.1 upgrades available NOW! Full range of games and software on display.

Technical Support - Home Demonstrations
Telephone Sales

42 Crwys Road,
Cardiff, CF2 4NN
Tel 0222-644611 Fax 644622

VISA Access

STAFFORDSHIRE

fc *fabis computing*
38 High Street
Burton-on-Trent
DE14 1JS Tel : (0283) 42824
Acorn Dealer

INTERNAL IDE DRIVES
A3000 & A3010
84Mb – £279
40Mb – £249

Plastic welcome on drives
Prices exclude VAT E&OE

CLEVELAND

YARM COMPUTERS
HARDWARE – SOFTWARE – PERIPHERALS
SUPPLIES TO EDUCATION, BUSINESS AND HOME

ACORN DEALERS

IBM compatibles built to customer requirements

THE LEARNING CURVE

Discount offered with all cash sales!

E&OE

Stockists of:

A3010 Family Solution	£499.00
A3010 Learning Curve System	£799.00
A4000 Home Office System	£1173.83
A5000 Learning Curve	£1699.00

Complete range of Acorn systems available

TELEPHONE ORDERS WELCOME

WINPENNY HOUSE, 137 HIGH STREET
YARM, CLEVELAND TS15 9AY

TEL: 0642 786922
FAX: 0642 783740

LONDON

ACORN APPROVED LONDON DEALER
Wide range of software and hardware stocked

Acorn Authorised Education Dealer

SPECIAL DEALS
On Education
Ring for best Prices

"The Best in the South (Well, we think")

MACHINES & SOFTWARE ON DEMONSTRATION, COME AND LOOK!

Easy to get to
Train: WOOD ST Station (British Rail)
Road: Bottom of M11, just off North Circular
Tel No: 081-521 1784

AUTOMATIC SERVICES
217 WOOD STREET
WALTHAMSTOW
LONDON E17 3NT

BIRMINGHAM

DACO SYSTEMS

459-463 Warwick Road, Tyseley, Birmingham B11 2JP

Authorised Acorn Education Dealer

Your Birmingham & Solihull Acorn Dealer

• Special Needs • Business •
• Education • Home Use •

Tel: 021-706 8933

DERBYSHIRE

HONORMEAD SOFTWARE SOLUTIONS

Admin House, The Grange, Hospital Lane, Mickleover, Derby DE3 5DR

Specialist in Computer Solutions for Education and Home User.
ACORN SPECIALIST DEALER FOR DERBYSHIRE
Extensive range of Acorn Hardware and Software, Specialist Peripherals and Upgrades available

0% **INTEREST FREE CREDIT AVAILABLE**
(Written quotations on request)

ACORN A3010 with FREE TURBO PACK
Now in stock!
Lots of Special Offers and Discounts

For friendly expert advice Visit our Showroom between 9.00 - 5.00 weekdays 10.00 - 1.00 Saturdays or Call **(0332) 512848/510951**

SEMERC dealer

SCOTLAND

the computer depot
SCOTLAND'S LEADING MICRO SPECIALISTS

We match most other advertised offers.

Commodore ATARI Acorn Educational Dealer AMSTRAD CITIZEN

205 Buchanan Street, Glasgow G1 2JZ
Tel: 041-332 3944
Fax: 041-332 0560
Workshop Direct Line Tel: 041-332 0625

Mail Order Service

Acorn COMPUTING CLASSIFIEDS

● Wanted urgently, A310 base for around £300. Call 0924 498065 and ask for John

● Star LC200C colour Dot matrix printer, £110 ono. Telephone 0732 454707

● Master 128, £225. Cumana C5400 80 track double sided, switchable disc drive with PSU, £100. Philips CM8833 monitor, £125. Quest paint Rom and disc with questmouse, £35. Hostages, £6. Holed out, £8. Question of Sport, £8. Plus others, 061 980 7137

● Archimedes software and books, for sale. Phone Paul after 6pm on 0272 652759

● A410/1, 4Mb, 20Mb, hdisk, colour monitor, software, £550. Contact Paul 0865 273846 Oxford 9-5pm

● Archimedes games: Elite, Lemmings, Zelanites, Blow-pipe, Zarch, Twin world, all for £55. Applications: PC Emulator, 1stW+ Genesis. All for £75. 0204 594597 David

● BBC games, disk and tape, back Micro Users, offers 0749 670326

● Electron, most plus units, software, disc drive, Master 128 disc drive, monitor, books, Wapping editor, SCSI card, Hybrid music system, AKF12 monitor, offers, 0792 794786

● Master 512K, dual plinthed 5¼" drives, leads, loads of tape and disk software (games and applications), manuals, £400. Call Matt on 0509 505134

● Archimedes Club. For details write to - 6 Furzeland House, Sheephouse Way, New Malden, Surrey

● Wanted Archimedes computer, any model, can collect. Phone 0332 678212

● A3000 2 Meg, colour monitor, mouse, games, educational software, £495. 0374 153365

● 16 track midi sequencer, UMI-4M for B/Master, a very professional product, £90. Telephone Warren - 071 228 1390

● A310 1Mb, colour monitor, excellent condition, PC Emulator V1.8, plus games etc. £450, Phone Dave on 0253 47134 after 7pm

● Archimedes A500 for sale. Offers around £1100 considered. Genuine reason for sale. Telephone Grant 0509 219970

● A3000 with upgrades Arm 3, 4Mb, OS 3.1, 80Mb hard drive SCS1 interface serial upgrade, all immaculate condition, £1150 ono. Tel 0633 856917

● Wanted mertec expansion box for master compact. 0603 504139 Evenings

● Acorn A3000 with Philips CM8833 colour monitor and some software £540. Tel 0792 843450

● Archimedes 310M Risc OS 2, twin disc drives, 2Mb Ram Philips colour printer, 1st word+ logistix manuals, £450. Tel 0491 638634

● Cumana CD Rom drive (External) plus SCS, Interface, boxed as new with warranty card for Archimedes series, £300 ono. Telephone 0274 496264

● Man Utd Europe, Lemmings Populous, Elite and Palnania originals. Total for all, £50. Telephone after 7pm 0733 342822

● A3000 2 Meg colour 1st word plus Genesis Interdictor, Lemmings, Elite, Chopper force, many more, £650. Tel 071 704 6093

● Wanted ST506 hard disc controller and A3000 podule case. 0428 723387

● Micro User back issues - complete from Vol 1, No 1 to Vol 11. Best offer accepted. Tel 0532 682822

● Micro User Vols 3 - 10, 93 mags, £40. Call Mohammed - 081 203 2391

● BBC B Issue 4 (+Richardson 64K) £100, 6502 2nd processor, £50. Offers accepted - Tel 0329 289416

● BBC B Issue 7, Acorn DFS, 40/80 d/drive, Inter-word, AMX mouse + art package, joysticks, £150. Lots of games, £1.00 each. Tel Gareth 0737 240997 weekdays

● Archimedes A310 colour 3.5", 5.25" floppies, PC Emulator, 4 slot backplane, some games shareware, Micro User magazines, £400. Tel 0444 482570

● Wanted Arcpinball, somebody must have a copy I can buy or swap. Tel 0275 472680

● Master 128, with Plinth and 40/80 Cumana Disc drive, colour monitor, joystick, Clares 'B' Base, Manuals. Seen working, £250 ono. 0865 61745

● A3000 base, 2Mb Ram exp, new 20Mb IDE, handscanner, TV modulator, joystick interface, five games, original manuals and application disks, £650. Tel 081 428 7399

● A5000, 140Mb hard disk, 4Mb Ram, multisync monitor, artworks 1.120, Impression 2.19 revelation, compression 1.17, tracker, Lemmings, chequered flag SW1V, Microdrive and more. Only £1450 ono. Telephone John 0920 467007 after 6pm

● Goldilocks, Easibase, ArcArt, three attractive programs for KS1 children. £3.00 each including P & P. NSoft, 4 Highfield Road, Magherafelt, BT45 5JD

● A3000 Archimedes colour monitor, KX-P1081 Pansonic dot matrix printer basic software, £650 ono. Phone 0258 456881

● BBC B, disc drive, printer, 14 games discs, Dumpout3, Wordwise, Spellcheck3, twin joysticks, books, £220 ono. For more details Tel 0934 876228 Evenings

● Entire set of Micro Users, plus all software, issue 1 to date, offers. Also b/arc Soft/hardware, 0751 73776 for list

● BBC master 512 board + dos, AMX mouse, inter chart (Rom) boxed. W/Wise + manuals, offers 0225 423036

● A5000 plus learning curve package, monitor hard drive, Riscos 3.1 PC emulator, £1150 ono. 0705 373772

● Bargain BBC B complete kit sideways Rom, shadow Ram, twin disc drives, Taxan colour monitor, Epson printer, modem business/games software, ready to use, suit school, £300 the lot. 0442 872745 Evenings

● Acorn A5000, 105Mb hard disc, 4Mb Ram, Canon BS330, feeder, software, magazines. Offers Tony on 081 517 2587 Evenings

● Wanted T2P3 Rom for Electron. Phone Weekends after 6pm on 0869 40488

PLEASE PRINT THIS AD IN THE NEXT AVAILABLE ISSUE OF *ACORN COMPUTING*

Name _____

Address _____

_____

_____ Daytime Tel: _____

POST TO: Acorn Computing Classifieds, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP

Cheque enclosed for £ _____
(minimum £4 for 10 words)

I certify that any software offered for sale is original and not a copy

Signed _____

CONDITIONS

- This service is EXCLUSIVELY for the use of private readers. No trade ads will be allowed.
- To avoid encouraging software piracy, all ads will be carefully vetted before they are accepted.
- Ads can only be accepted on the form opposite (or a photocopy of it).
- There is no maximum to the number of words you include in your ad. if there is insufficient room on the form, continue on a separate sheet of paper.
- The cost is 40p per word, with a minimum of 10 words.
- **WE GUARANTEE your ad will appear in the next available issue of *Acorn Computing.***

Masterful upgrade

John Allen puts a third generation database through its paces

PRODUCT SPOTLIGHT

Product: Masterfile 3
Price: £49
Supplier: Risc Developments, 117 Hatfield Road, St Albans, Herts AL1 4JS
Tel: 0727 840303

MASTERFILE 3 is a low-cost basic database for all Acorn Risc OS machines. It succeeds the equivalent program on the 8-bit BBC Micro and is best compared to the similarly priced Junior Database from Iota and Circle Software's Impact.

The package is suited to traditional applications such as membership records, catalogues, product lists and the like. Records are shown one at a time, with the individual fields of each record displayed in a window, The fields can be text, integer or decimal numbers, dates, calculations, sprite or drawfiles.

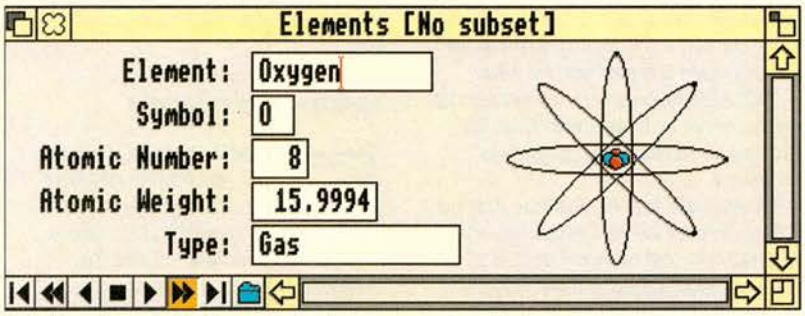
Setting up a database is relatively easy. First a record is defined using a database descriptor window. Fields are given names, types, size, possible values and a number of other options. Each field is described in turn and the descriptor saved – the database is then ready to use.

A standard card is initially used to display each record of a database but it can be altered using the card designer, allowing several different ones to be designed for displaying the same data. This unusual feature is a definite plus. The card design can also include sprites and drawfiles.

This procedure is comprehensive so defining a database and its card is not as easy as in Junior Database or Impact – which is especially straightforward using the machine's graphical facilities to great effect.

Masterfile has the facilities you would expect from a standard database. You can edit, add and delete rows, browse through a file, locate a record, create subsets and indices and output all or some of the data to a printer or file.

Often you only want to look at part of a database, for example members of a club whose subscription is overdue, or customers who live in Stockport. These subsets are produced in a *Create subset* window which defines a filter and only records which satisfy the conditions will be searched, viewed or saved.



● *Different and effective card designs are easy to effect*

Reports can be produced on paper or data saved to a file and can be one of two standard types – tables and labels. A table can either have the fields and their names printed below each other or the fields horizontally across one line, whereas a label has the fields printed below each other.

As only simple types of reports are available it is often necessary to export data to other Risc OS applications for processing and this package can create files in Ascii, CSV or TSV format.

Computer Concepts' Impulse – which is becoming a standard for data transfer between applications – is not supported by Masterfile 3 so mailmerging records into Impression documents is fiddly.

It is possible to import CSV or TSV files into a Masterfile database by dragging the file's icon into a database window.

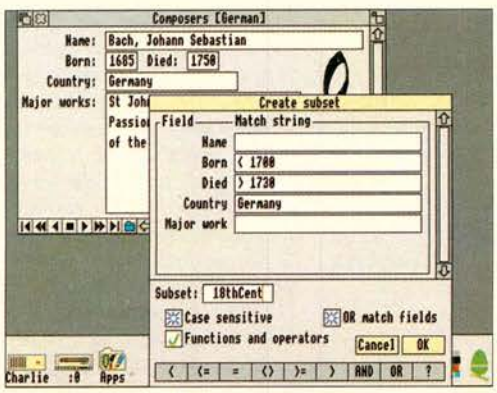
Summing up

Masterfile 3 is a good budget-priced database. It has a few refinements that other similarly priced databases don't have but a few disadvantages too.

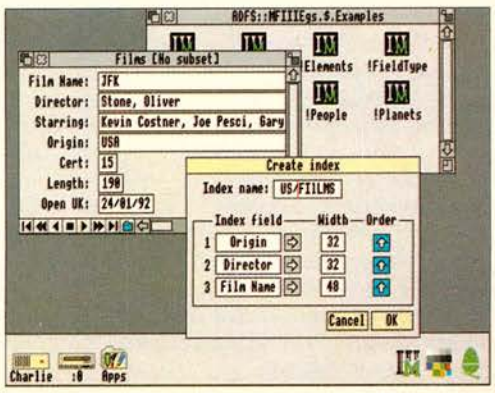
It does not take full advantage of Risc OS when setting up a database, requiring a table to define the database and then the cards have to be defined. Other products have a single stage process but don't allow alternative card designs or included graphics.

This is not a fully specified database – you'd have to pay a lot more for that – but it contains most facilities that are needed in a home or educational environment.

After researching interactive computer simulation methods, John Allen moved into journalism, becoming Science and Technology Producer for BBC Radio Continuing Education, Independent Radio News' Science and Environment Correspondent and is currently the Programme Controller of LBC Newstalk.



● *Subsets are useful for any application*



● *Creating an index is straightforward*

Ways and means

ON reading Steve Turnbull's comments on page 15 of the May issue, some new readers may be forgiven for thinking that in going for Acorn machines they've joined the wrong band-wagon.

He seems to be saying that Acorn got it all wrong adopting the Learning Curve approach rather than going for the Apple *guidelines on programming conformity* which *doesn't take a genius to figure out that it is a good idea*. What he doesn't stress is *a good idea for what?*

Although he does infer elsewhere that Apples are of little use other than for running professional programmers' programs.

Newcomers may be unaware that the *raison d'etre* for Acorn Computers was to help schools and ordinary people to understand something about micros and computing and not to be the mere commercially oriented zapping games machines. Acorn have served and continue to serve their interested purpose better than most. – **H. J. Henson, Dudonald, Kilmarnock.**

● *The point being made was not that Acorn got it wrong, but simply that the sheer versatility of the machine makes it difficult to enforce a standard user interface which reduces the learning curve when using a new package.*

So it is "too easy" for a less experienced programmer to create a program that uses novel and unusual control methods, rather than having a standard Desktop interface.

Standard interfaces mean that pressing F3 will always *bring up the save icon for the highlighted document and the bottom item on an applications iconbar menu will* always *be Quit.*

If common functions are always the same, new users can concentrate on what the new package is actually for rather than worrying about which keys to press to do a save.

Talking to friends

I HAVE started a magazine with my friends and have run into a problem. One of my friends has an Amiga 500 with WorkBench 1.3 and the magazine is being produced on an Acorn A5000.

We have tried several different formats of disk, but nothing seems to work. We keep receiving errors like *Disk not formatted*. Is there any way of transferring data from his Amiga 500 to my A5000? – **Christopher O'Neill, Bourne End, Bucks.**

● *The easiest way to work together is to save your files in text/Ascii format and then put them on to a PC disk. You can read PC disks on the A5000 without any additional software or hardware but your friend will need to acquire an Amiga public domain program called Messy Dos.*

This isn't very user friendly but it is effective. Later Amigas, like the Acorn A5000, have PC reading capabilities built-in. Either of you can then drag text files into your preferred wordprocessor or DTP package and vice versa.

A hard Master

My local hospital has recently bought a new BBC Master 128 for the Occupational Therapy Department. Although it seems that everybody is moving on to 32-bit technology, they chose it for the wide range of suitable software available – as well as its ability to link with specialised hardware.

I am currently developing a program to be used for keeping track of equipment which is loaned out to patients that will involve relatively large amounts of data. For this reason they wish to acquire a hard disk to increase speed and storage.

Are hard disks still commercially available for this computer? – **Michael Linfoot, Grantham, Lincs.**

● *We were delighted, not to say stunned, to find that there is a hard disk system still available for the Master 128. Talk to Cumana (0483 503121) who have 30Mb drives for £150, excluding VAT.*

Expanding the A4

PRIZE LETTER

I NEEDED the portability of a notebook and just before the A4's release was considering a PC. As I was an Archimedes user the A4 was the right choice ... or was it?

Its speed, performance and portability are excellent but my main concern is its lack of support in expansion. I was fully aware of its limited expansion capabilities before but I was also aware of what was possible via its standard ports.

For example, until not so long ago if you wanted to add a fax pack to your Archimedes your only choice was Computer Concepts' FaxPack even though there were hundreds of fax/modems readily available in the PC world that could easily be plugged into the serial port.

Now thanks to David Pilling's ArcFax many of these can be used by all Archimedes users – including A4 users.

Like the fax/modems many other peripherals are available – such as scanners and digitisers – which can be connected to the serial and, on new machines, the bi-directional parallel port. These are just waiting for an appropriate program to be written to utilise them.

Another area for expansion is the Econet interface. Vertical Twist produce a Midi interface/sound sampler for the Acorn machines which can be used in place of Econet. I approached them for an A4 version – imagine a portable Midi workstation.

Their reply was that they were considering one but there wasn't enough demand to justify manufacturing it. Perhaps an Acorn A4 Pressure Group should be started.

What else is possible via the Econet interface? Maybe a fax/modem/sound sampler with an in-built microphone that could turn the A4 into a fax-cum-answering machine (like CC's) and tape recorder – as on the Apple Powerbooks – as well as allowing it to access bulletin boards and the like.

I am sure that not only would there be a demand but that extra sales of the A4 would be generated. If at the same time, the Midi ports could be retained it would be a definite seller.

Although designed for education the A4 is potentially a powerful business machine. I use it as such but to compete against equivalent PC notebooks it must have a certain amount of expandability.

On PCs standard features such as fax/modems, SCSI interface and so on must be implemented as much as the ability to add peripherals, if the A4 is to succeed. Could some genius produce a SCSI port for the A4 even if it occupied the Econet, serial and parallel port simultaneously?

Like many notebook users I also use my A4 as a desktop computer at home, just plugging in monitor and keyboard, and more peripherals would be welcome here. Many are portable anyway and would more than suit a notebook. As a powerful DTP tool the ability to add scanners and digitisers is vital.

My plea to software houses and manufacturers is: Please bear the A4 in mind when designing peripherals. Podule space can be filled rather quickly but printer sharer boxes can produce an awful lot of parallel ports from one machine.

These can still be used by other Archimedes users as well as meeting the needs of those with no more podule space. – **Jimmy Imossi, Gibraltar.**

Sound bytes

HAVING recently been experimenting with sound samples on my A3010 I was glad to discover that a friend had a large number of samples on his PC. Borrowing some I managed to convert them into modules at the expense of disk space and memory.

Therefore, I was wondering if any of your readers had any public domain applications which allow you to play back a raw-byte type file – PC, VOC and Armadeus – from memory or even better still directly from disk. – **Andrew Flegg, Henbury, Macclesfield.**

● *We'd recommend you have a word with Desktop Projects who do have software that will play samples from disk. But if any reader has any help to offer you can contact Andrew via the magazine.*

Font lore

HOW are fonts created and what is a font file? I have noticed a difference in price between some packages with one advert for 100 fonts for £10 and another offering one for the same price.

Are there any font designers and editors available for the Archimedes? – **Paul Gledhill, Halifax, West Yorkshire.**

● *A font designer for Risc OS 2-style fonts created by Acorn themselves is available from a number of sources. However, a Risc OS 3-font designer is not generally available.*

The differences in prices is down to the effort put in, although that distinction isn't rigid. The Electronic Font Foundry (0344 891355) produce a very large selection of high quality fonts in Risc OS 2 and Risc OS 3 formats.

PD libraries always produce things cheaply but the quality is very variable. In between come the smaller commercial houses with a small selection of fonts of good quality.

Style council

I READ with agreement your Comment in the May issue regarding the advantages of all software conforming to a common style. I also felt great frustration and disappointment that you didn't go on to say that the Acorn Style Guide is out of print and currently unobtainable by the ordinary programmer. I have had the Risc OS Style Guide on order since last October and have been told that it is being updated for Risc OS 3.1 with no definite date for its release. – **Bill Geers, High Wycombe, Bucks.**

● *There is still no sign of this and after speaking with Acorn it appears that it may not appear as a single publication but as an addition to the Programmer's Reference Manual. But nobody seems quite sure.*

Graphical know-how

I HAVE already got several manuals including the Risc OS 2 Reference Manuals. These are all very well, but they do not explain some of the finer points of programming. Are there any books which explain how to write routines for sprite scaling/rotation and 3D vectors?

I've already looked long and hard for anything resembling one but have had no luck. Do you know where I could find this information? – **M. Carter, Slough, Berkshire.**

● *The best book for what you want is probably the Archimedes Game Maker's Manual by Terry Blunt and published by Sigma Press (0625 531035).*

Too upgrade or not?

MY A310 and I have been very happy together since 1988 and the only upgrade I have ever bought is from the Arthur OS to Risc OS 2.

I'm now at university and I'm thinking of updating my machine to 4Mb of memory, Risc OS 3.10 and perhaps an ARM3 – what does ARM stand for?

The thing is that I don't want to upgrade just for the sake of it and my dealer has said that I might be better trading it in and getting a newer model.

I don't want you to make my decision for me but any advise would be gratefully received. – **Ian Duffey, Twickenham, Middx.**

● *ARM stands for Acorn Risc Machine, and Risc stands for Reduced Instruction Set Computer which means that the ARM is fast because it's simple in design and structure – rather being a Cisc (Complex Instruction Set Computer) which is very complicated and any speed is derived from pushing it as hard as possible.*

As to your upgrades, I think it would be best to trade in because the necessary changes to the A310 are awkward and fairly pricey. The price you get for the machine plus the cost of upgrading it could easily come to the price of a new machine.

If you've been content with a 1Mb A310 all this time, the A3010 with 2Mb plus a portable colour TV with Scart will give you everything you need. Subsequently, if you decide you want a hard disk, there are several options such as the HCCS (091-487 0760) expansion system and other third party standalone hard disks.

All programs printed in this magazine are exact reproductions of listings taken from the running programs which have been thoroughly tested.

However, on the rare occasions when mistakes occur, corrections are published as a matter of urgency.

Should you encounter error messages when you type in the program, they will almost certainly be the result of your own typing mistakes.

Unfortunately we cannot answer personal programming queries concerning mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in these pages

Wanted: Friendly programmers

WHY don't you insist that software contributors provide tidy exists from their programs? Are we missing something or do many of these programs fail to quit or return to the Desktop after Ctrl+Escape and very often leave unwanted modules in RMA, BBC Fonts somewhere or other and sound samples lying about just waiting to disrupt other programs?

As ordinary owners of an A3000 with 4Mb and 80Mb hard disk we find the need to reset the machine and indeed sometimes restart it after many PD or demo programs. This is infuriating, a waste of time and on ongoing strain on the disk drive.

Please can be have some more professional standards even in freebies? Or at least, help us to understand how best to clear these *litterbugs* from our machine. – **Christopher and John Gilligan, Bristol.**

● *You don't need to worry about your hard disk – it can take it. Most considerate programmers do provide proper exits – and warn you if they've changed the font size or anything else nasty.*

We try to encourage thoughtfulness but sometimes you get a good program with a bad exit. Perhaps one day all programmers will be user friendly.

Want to write to us? The address is:

Letters, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Writers of the most interesting letters receive a £15 prize.

Design Concept

031 668 2000
30 South Oswald Road
Edinburgh EH9 2HG

Calligrapher

A New Educational Tool

Design Concept is pleased to announce Calligrapher, an Archimedes application for supporting the teaching of basic writing skills. The pupil, after some normal tuition by the teacher, can practice the movements for writing on their own, either at home or at school.

Using the established 'Foundations of Writing' font, Calligrapher animates the drawing of words and letters at whatever speed suits the pupil.

Calligrapher costs £15 (no VAT) and requires the Foundation font (£8). Carriage £2 per order.

Call for our free catalogue including many other applications and a whole range of outline fonts.

MasterCard VISA

TMJ

TMJ Computer Software

39a Station Road, Desborough,
Northants. NN14 2RL
Telephone/FAX: 0536 762713
Online BBS Darkhaven: 0604 413716 (24hrs)

What You See is What You Pay

VISA

2067 BC	15.50	Flight Simulator Tool Kit	39.00	Microdrive II	31.00
3D Construction Kit	45.00	Fervour	23.00	MicroDrive II Designer	31.00
Aldebaran	31.00	Games Wizard	27.00	Master Break	17.00
Black Angel	31.00	Galactic Dan	23.00	Nebulus	22.00
Battle Chess	27.00	Gods	23.00	Pandora's Box	22.00
Break 147 & Superpool	30.00	Guile	27.00	Para Droid	23.00
Chocks Away	22.00	Hero Quest	27.00	Plat it Again Sam 1	23.00
Chocks Away Extra	18.00	Ixion	23.00	Quest for Gold	23.00
Chocks Away Comp.	34.50	James Pond	23.00	Saloon Cars Deluxe	30.00
Chamions Compendium	27.00			Saloon Cars Xtra Courses	18.00
Chopper Force	25.50	No VAT or P&P to add		Sim City	31.00
Chuck Rock	22.00			Spheres of Chaos	23.00
Champions Comp.	26.00	Last Ninja	23.00	Swiv	23.00
Cyber Chess	43.50	Lemmings	23.00	Technodream	23.00
Cyborg	23.00	Lotus Turbo Challenge II	23.00	The Real McCoy 2,3,4 (ea)	26.00
Cyberzone	23.00	Oh No! More Lemmings	18.00	Waterloo	22.00
Dreadnoughts	34.00	Omar Sharif's Bridge	27.00	**DISCS**	
Dreadnoughts Add on	16.00	Populous	27.00	3.5 INCH DSDD	13 for 6.50
Elite Gold Edition	38.00	Karma - Flight Trainer	23.00	+ plastic wallet	7.25
Enter The Realm	22.00	Krysalis Compilation	27.00	3.5 inch HD Disc's	13 for 8.50
Ego : Repton 4	23.00	Manchester United Europe	23.00	+ plastic wallet	9.25

NEW RELEASES

ZOOL	£ 23.00
ADVANCE	£111.00
ALMANAC	£ 68.00

1993 Catalogue now available inclues BBC, Electron and Sega software and Hardware.

Ribbons & Covers

KXP1080,1081,1180, 1123	4.50
STAR LC10 & NX1000	5.00
STAR LC200 Colour	13.75
Citizen 120D /Swift 24/24E	4.50
Citizen Colour 9/24/24e/224	14.00
Epson LQ 4/500/550/850	4.50
Epson LX80	1.50
H/P 500 Double Caps. Cart.	24.00
Colour Cart.	27.00
A3000 Keyboard Dustcover	7.00
A3000 Keyboard & Monitor	10.00
A3010/3020 Keyboard only	7.00

Sound & Music

Digital Symphony	50.00
Notate	63.00
Rhapsody 2	53.00
Serenade	121.00

Art & CAD

Artworks	161.00
CADet	170.00
Tracer	55.00
Illusionist	90.00
Revelation 2	125.00
SmArt	54.00
SmArt files (each)	38.00

Spreadsheets

Eureka	132.00
Pipedream 4	199.00
Schema	114.00
Home Accounts	41.00

DTP

Advance	111.00
Impression II	161.00
Impression Junior	88.00
Pendown 2	57.00
Poster	89.00
WORDZ (NEW)	105.00

Utilities

Compression	41.00
DBEdit (Basic Editor)	30.00
PC Emulator	114.00

Education

10 out of 10 Maths/English	23.00
10/10 Early Essentials	23.00
An Eye for Spelling	37.00
Fun School 3, 4 (All Ages)	23.00
Landmarks	25.00
Let's Spell (4 pack)	23.00

CITIZEN 120D+	A3010 FS
£140.00	£499.00
SWIFT 9	A3010 LC
£192.00	£799.00
SWIFT 24e	A4000 HO
£299.00	£1174.00
cable & paper included	A5000 LC £1699.00

All prices include VAT and P&P - Access and Visa Accepted
Open Mon-Fri 9.30 - 12.30, 1.30 - 5.30; Saturdays 9.30 - 2.00

Visit our new shop in Desborough!
A3010 Learning curve & other products on display.

Micro Laser Designs

High Street, Paulton, Bristol BS18 5QE

Acorn
Authorised Dealer

New Retail Premises !

We can supply the full range of Acorn hardware & software.

Part exchange welcome !

CalComp 600 dpi A3 Laser £2995 + VAT

Ex-demo and second user equipment available

Please phone for prices on :
Computers, Monitors, Printers, Scanners etc.
Colour Printing / Imagesetting Services.

DTP SPECIALISTS

✳ PRINTING ✳ SCANNING ✳ DESIGN ✳

& FaxPack (0761) 410711

Advertisers' Index

4 Mation	61	ICS	12-14,16
4th Dimension	93	Icon Technology	26
10/10 Educational S/W	32	Integrex	29
Alsystems	23	Kettering Comp Centre	100,101
Arch Angel	58	Longman Logotron	18
Armtech	65	Micro Aid	96
Atomwide	OBC	Micro Laser Design	106
Automatic Services	100,101	Micro Studio	41
Broad Oak	100,101	Norwich Computers	78
Circle Software	26	PDK Technologies	23
Clares	88	Pineapple Software	72
Colton Sw	4	Rickett Educational Media	38
Computeck	72	Risc Developments	IBC
Computer Concepts	34,44,50	Senlac Computing	62
The Computer Depot	100,101	Serial Port	3
Contex	78	Series Statistical S/W	58
CSS	100,101	Skyfall	58,61
CU Electronics	49	SJ Research	25
Dabhand	10,11	Software Bargains	75
Daco Systems	100,101	S.S.E.R.C	38
Dalriadi Data Tech	58	Spacetech	38
Datastore	78	Silcon Vision	46
Datastream	58	Techsoft	96
Davvin Computers	100,101	TMJ	106
Dec Data	96	Turring Tools	58
Design Concepts	106	Unique Way	100,101
Desktop Innovations	58	Vipray	100,101
Desktop Projects	69	Vertical Twist	41
Digital Services	9	Watford	80-87
Ecctis 2000	96	Widget SW	61
Europress Software	IFC	Yarm Computers	100,101
Explan UK	52		
Gremlin Software	25		
Honourmead SW	100,101		

The New Generation!

RISC User

MAGAZINE

RISC User, the highly popular magazine for Archimedes, is bigger and better. The new RISC User is now B5 size, offering a sophisticated design, bigger colour illustrations and bigger pages with more information. Altogether better value and no increase in price.

RISC User is still a convenient size to assemble into an easy-to-use reference library, containing all the information you need as an Archimedes user. Every issue of RISC User offers a wealth of articles and programs with professionally written reviews, specific educational features, lively news help and advice for beginners and more experienced users.

RISC User has already established a reputation for accurate, objective and informal articles of real practical use to all users of Acorn's range of RISC computers.The new format provides a quality of presentation and format unmatched in the Acorn world. You can enjoy all that RISC User has to offer by taking out a subscription today.

MAJOR DISCOUNTS

RISC Developments is also well known for its range of professional software and hardware. As a RISC User subscriber you will receive at least 15% off RISC Developments software and 5% off RISC Developments hardware.

You can easily save the cost of your subscription in this way.

A year's subscription to RISC User is £19.90 for the first year and only £18.40 to renew thereafter (Overseas: Europe £29, Americas and Africa £38, Elsewhere £41). Taking out a subscription now could be the best decision you will ever make in ensuring that you get maximum benefit and enjoyment from your computer.

Phone or send your subscription to

RISC developments

RISC User, Subscriptions Department,
117 Hatfield Road, St Albans, Herts AL1 4JS,
Tel. 0727 840303, Fax 0727 860263,
(and quote reference A3).

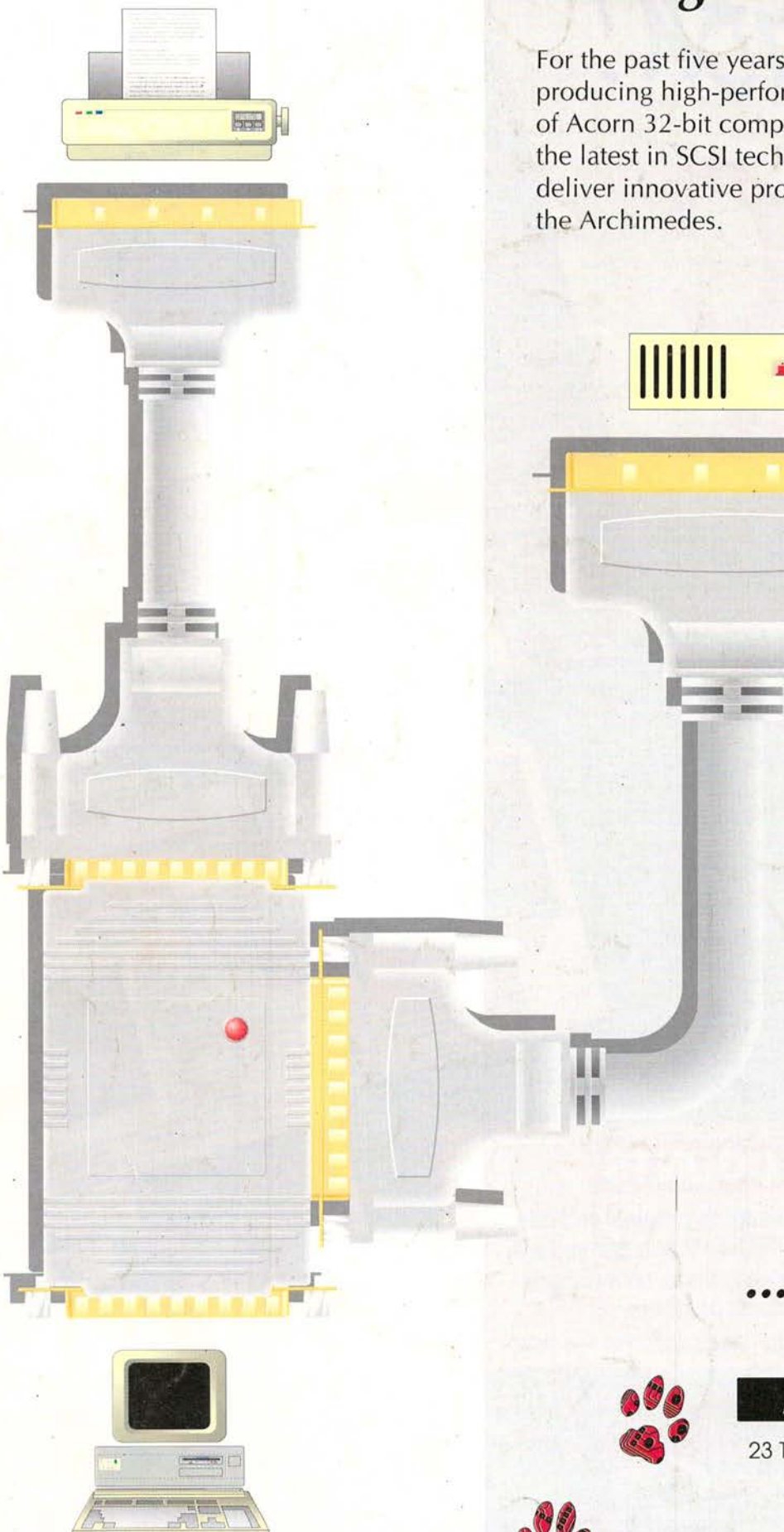
RISC User MAGAZINE DISC

Disc supplied separately

The RISC User magazine disc is widely acknowledged to be the best magazine disc for Acorn computers. Each disc is filled with original software of the highest quality, fully tested and supported by our own staff plus all the programs from the magazine and other items from within the magazine pages.

turning concept ...

For the past five years, Atomwide have specialised in producing high-performance solutions for the entire range of Acorn 32-bit computers. From the first ARM3 board, to the latest in SCSI technology, we have continued to deliver innovative products that complement the power of the Archimedes.



Atomwide's SCSI interface gives A3010, A3020, A4000, A5000 & A4 users the benefits of SCSI, without the need of a podule slot. Working through the parallel port, it allows a number of add-ons such as hard drives or CD ROM players to be connected to your computer.

There are two versions of the interface available; Mono/SCSI which provides a standard SCSI bus, and Printer/SCSI which allows printing using the parallel port, as well as connection to a SCSI bus.

The Printer/SCSI interface is supplied with a cable and full fitting instructions, all for only £75 (+VAT). The Mono/SCSI interface is supplied, as above, for £49 (+VAT).

... into reality

ATOMWIDE

23 The Greenway Orpington Kent BR5 2AY
Tel 0689 838852 Fax 0689 896088
Email: sales@atomwide.co.uk